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ABSTRACT

Under the Idaho state system for curriculum development in vocational education, Technical Committees made up solely of industry personnel are responsible for drawing up task lists for each program. A Technical Committee Report is prepared on completion of the Committee's assignment. This report presents a task list that reflects current trends and the skills necessary to obtain and retain a job in the printing/graphic arts technology industry and to advance in the occupational field. An introduction describes the curriculum development process. The curriculum framework that follows provides the program area, program title, Idaho code number, Classification of Instructional Programs code number, major concepts/content, laboratory activities, special note(s), intended outcomes, and levels of instruction codes. The task list groups 157 occupational skills or tasks by the following 12 modules: demonstrate proficiency in performing employability skills and habits; demonstrate knowledge of introductory aspects of the printing industry; demonstrate proficiency in performing skills relating to paper characteristics; perform estimating operations; perform graphic design operations; perform line photography operations; perform graphic arts halftone operations; perform color reproduction operations; perform stripping operations; perform proofing and platemaking operations; perform offset press operations; and demonstrate proficiency in performing finishing/binding operations. The curriculum guide that follows lists a performance objective and the enabling objectives for each of the tasks within a module. The level of instruction is also indicated. (YLB)

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ED354305

Vo. Ed. #249

Curriculum Guide for PRINTING/GRAPHIC ARTS TECHNOLOGY

Invest in Success

IDAHO VTE VOCATIONAL TECHNICAL EDUCATION

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STATE DIVISION OF VOCATIONAL EDUCATION

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PRINTING/GRAPHIC ARTS TECHNOLOGY

STATE DIVISION OF VOCATIONAL EDUCATION

1992

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VO. ED. 249

PRINTING/GRAPHIC ARTS TECHNOLOGY

March, 1992
State Division of Vocational Education
650 W. State Street
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State of Idaho
DIVISION OF VOCATIONAL EDUCATION

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March 4, 1992

Greetings:

The Division of Vocational Education is pleased to provide you with this State Curriculum Guide as a part of our commitment to your efforts in conducting quality educational programs for students who are preparing for employment in meaningful and rewarding occupations.

We know that a great deal of time and effort goes into the operation of a Vocational Education program, and we applaud your local efforts to make these programs available for students. This State Guide should assist you in these efforts.

The competency-based State Guide was developed from a Technical Committee Report prepared with the assistance of industry personnel. The Report includes a Task List which is the basis for the State Guide. The Tasks identified in the Technical Committee Report were representative of the competencies needed by a worker to be hired or employed in Idaho businesses.

Vocational Education has adopted the Competency-Based approach as the primary method of delivering Vocational Education skills to students. Competency Profiles are available for each student enrolled in programs as a means of recording student progress. The Profile is used as a student record when additional training is sought -- aiding in the program articulation process. The Profile also communicates to employers those skills the student has mastered.

We hope you find this document useful. Your comments are welcome!

Trudy Anderson, Ph.D.
Administrator

Equal Opportunity Employer

TABLE OF CONTENTS

Introduction iv

Acknowledgements v

TASK LIST vi

CURRICULUM FRAMEWORK 1

MODULE I - Employability Skills and Habits 9

MODULE II - Introductory Aspects of the Printing Industry 15

MODULE III - Performing Skills Relating to Paper Characteristics 19

MODULE IV - Estimating Operations 22

MODULE V - Graphic Design Operations 29

MODULE VI - Line Photography Operations 39

MODULE VII - Graphic Arts Halftone Operations 48

MODULE VIII - Color Reproduction Operations 53

MODULE IX - Perform Stripping Operations 58

MODULE X - Perform Proofing and Platemaking Operations 68

MODULE XI -Perform Offset Press Operations 74

MODULE XII - Perform Finishing and Binding Operations 83

INTRODUCTION

The curriculum development process undertaken by the Idaho Division of Vocational Education involves the active use of industry personnel. Industry personnel comprise the sole membership on Technical Committees which are responsible for the development of Task Lists for each program. A Technical Committee Report is prepared on completion of the Committee's assignment. This publication is the Technical Committee Report.

The Task List prepared in the Technical Committee Report reflect the current trends and skills necessary for an employee to: 1) Obtain a job in Idaho's industry, 2) retain a job once hired, and, 3) to advance in the occupational field. Task Lists are grouped according to Duty areas generally used in industry settings. Duty areas are used as the basis for modules in the Statewide Curriculum Guide development process. The Technical Committee segment is the single most significant step in the curriculum development process. All future curriculum activities are predicated on the premise that an accurate picture of industry needs are reflected in the Task List.

Instructional personnel are selected to develop the Statewide Curriculum Guide. These instructors write Performance Objectives for each Task and the subsequent Enabling Objectives for each Performance Objective. The committee members prepare all material in a competency-based format so as to have an effective and efficient methodology for determining student progress. The Statewide Guides are designed as the prime determiner of program content. All programs must follow the established Guide in order to be approved for operation. Any deviation from this Guide requires written approval from the respective program supervisor at the Division of Vocational Education. It is not the intent of the Division that all programs be designed to be exactly the same, but assurance is needed to ensure that the program meets the minimum standards for operation, based on the community needs, equipment, and facilities available to the local school or institution.

The Technical Committee Report does not dictate the level of instruction The Task List developed represents the entire occupational field. Schools and Institutions determine what skills can be taught and what depth of instruction can be provided. They must choose the Tasks to be taught from the Technical Committee Report but are free to determine how many or which ones can be incorporated into their program.

The Technical Committee Report is also used as the primary list for generating Student Profiles. These Profiles are used as a cumulative record of each student's progress. They are printed in a folder format and have levels of performance scales for each Task so that student competence can be recorded for individual skills or tasks. This document will become the main component for Articulation activities in the event that the student desires to go on for additional training or education.

ACKNOWLEDGEMENTS

The Technical Committee process involves personnel from industry who are selected by the Division with assistance from the State Council on Vocational Education. People who serve on the Committees are nominated by local administrators. They generally come from local advisory committees for existing Vocational Education programs or are community and private sector representatives in a capacity to provide the necessary information about industry needs. These people serve with the approval of their employers and give their time and energies to the project without cost. The Division provides reimbursement for per diem and travel. We are indebted greatly to these industry representatives and to their employers for the resources so freely given to the pursuit of ensuring that Idaho students receive the most current training and education possible and that which is demanded by industry.

To this end, the Division recognizes the following people who served on the Technical Committee for Printing/Graphic Arts: Ron Ackerman, Garden City; Blaine Borkman, Pocatello; Kelly Crompton, Pocatello; Jim Ferguson, Boise; Larry Van Quill, Boise; Chuck Turnbow, Lewiston; Vic Walstrom, Boise; Bill Wieck, Boise; and George Heckenlively, Boise.

Your support and assistance was very greatly appreciated. Your patience for enduring the educational process is also noted. The students and instructional staff will be much more able to accomplish their respective goals as a result of your contributions.

The curriculum guide development process utilizes instructors selected from existing occupational programs to develop performance objectives and enabling objectives from the task list developed by the technical committee. The committee members selected to serve as writers for this guide were: Gordon Hampe, Boise High; Miles Carroll, Idaho Falls High; Brad Thode, Wood River Jr. High; Ron Bennett, Bonneville High; Don Carver, Lewis-Clark State College; Paul Kidd, Idaho State University; and Vern Hagler, Idaho State University.

These contributions are greatly appreciated by the Division and the administrators of programs statewide.

Sho Ueda, Supervisor
Trade, Industrial and Technical Education

Don Eshelby
Director of Program Services

TASK LIST

The task list is a set of occupational skills or "tasks" which are grouped by modules. Each task describes an occupational activity that, when performed, will result in a finished process and can vary, but should always allow an evaluation using the standards which address the operation, appearance, dimensions, or similar characteristics.

The tasks in each module represent the fundamental activities that should be required of any student seeking institutional credit for performing at an acceptable level of competency. The tasks are sequenced to reflect a progression from the curriculum standards which are unique to an institution's instructional program and which should be added upon approval of the administration.

The capability for providing instructional experiences and practical application of the tasks contained in each module will determine the scope of the vocational-technical program. Primary considerations will obviously be the availability of equipment and the expertise of the instructional staff.

Individual records of student progress based on the task list should be developed or adapted by the vocational institution for use in recording the student's attainment of competency by task and module. Each task has a specific performance objective and a series of enabling objectives. The enabling objectives are steps in the procedure of attaining the knowledge and skill specified in the performance objective. Student's progress is measured by successful completion of the enabling objectives by oral, written or performance testing.

CURRICULUM FRAMEWORK PROGRAM AREA: TRADE AND INDUSTRIAL

IDAHO DIVISION OF VOCATIONAL EDUCATION REVISION DATE: March 9, 1992

PROGRAM TITLE: PRINTING/GRAPHIC ARTS TECHNOLOGY

IDAHO CODE NUMBER: 6190 CIP:48.0201

SECONDARY POSTSECONDARY ADULT
SCHOOL CREDITS_____ COLLEGE CREDITS_____ VOCATIONAL CREDITS __

APPLICABLE LEVEL(S): ___7-9 ___9-12 ___Postsecondary ___Adult

I. MAJOR CONCEPTS/CONTENT: The purpose of this program is to prepare students for employment in the printing industry. This program also provides supplemental training for persons previously or currently employed in this occupation/these occupations.

The course content will include the following: administration, pre-press, press and post-press operations and maintenance, typography, copy preparation, stripping black and white, line photography processes, offset presswork, estimating, graphic arts halftone processes and color reproduction technology.

The course content should also include training in communication, leadership, human relations and employability skills; and safe, efficient work practices. Some instruction on customer relations, sales, and general public relations will be included.

II. LABORATORY ACTIVITIES: Plant or laboratory activities are an integral part of this program. These activities provide instruction in the use of tools, equipment, materials and processes found in the industry. Students are also instructed in the following: customer layouts, composition and camera ready copy; producing line negatives, halftone negatives and contacts; stripping line negatives, halftone negatives, and multicolor and process color; producing printing plates, single color proofs and color proofs; operating and adjusting offset presses; and operating cutting, folding and binding equipment.

III. SPECIAL NOTE: The Vocational Industrial Clubs of America, Inc., is the vocational student organization which reinforces classroom instruction by providing communications, leadership, human relations and employability training experiences. It also reinforces specific vocational skills. When provided, these activities are considered an integral part of this program.

The cooperative method of instruction may be utilized for this program. Whenever the cooperative method is offered, the following is required for each student: a training plan, signed by the student, teacher and employer which includes instructional objectives and a list of on-the-job and in-school learning experiences; a work station which reflects equipment, skills and tasks relevant to the occupation the student has chosen as a career goal. The student must receive compensation for work performed.

The typical length of the technical part of this program for the average achieving student at postsecondary level is 1800 hours for certificate, 2250 hours for AAS. The average length for secondary students is 900 hours with multi-period blocks of instruction provided to accomplish a major portion of the listed competencies. Students completing this program would be PrintEd certified.

IV. **INTENDED OUTCOMES: After successfully completing this program, the student will be able to demonstrate proficiency in performing:**

01. **Employability skills and habits.**
02. **Introductory aspects of the printing industry.**
03. **Skills related to paper characteristics.**
04. **Estimating operations.**
05. **Graphic design operations.**
06. **Line photography operations.**
07. **Graphic arts halftone operations.**
08. **Color reproduction operations.**
09. **Stripping operations.**
10. **Proofing and plate-making operations.**
11. **Offset Press operations.**
12. **Finishing/Binding operations.**

LEVELS OF INSTRUCTION CODES:

E **Student is introduced to the concepts and is familiar with basic operational functions. This level denotes basic instructional content necessary to enter the job market.**

R **Student can perform the activity with minimum supervision. This level denotes instructional level necessary to obtain and retain employment in a chosen field.**

A **Student can perform the activity without supervision and will meet industry standards. This level denotes advanced skill training necessary for job retention and promotion.**

STUDENT PERFORMANCE STANDARDS TASK LIST EFFECTIVE DATE: March, 1992

PROGRAM AREA: Trade and Industrial SECONDARY:_____

PROGRAM TITLE: Printing/Graphic Arts Technology POSTSECONDARY:_____

01.0 DEMONSTRATE PROFICIENCY IN PERFORMING EMPLOYABILITY SKILLS AND HABITS - The student will be able to:

E	01.01	Identify employment opportunities.
E	01.02	Apply employment seeking skills.
E	01.03	Interpret employment capabilities.
E	01.04	Demonstrate appropriate work behavior.
E	01.05	Maintain a safe and healthy environment.
E	01.06	Maintain a business-like image.
E	01.07	Maintain working relationships with others.
E	01.08	Communicate on the job.
E	01.09	Adapt to change.
E	01.10	Understand how a business works.
E	01.11	Perform necessary mathematical skills.

02.0 DEMONSTRATE A KNOWLEDGE OF INTRODUCTORY ASPECTS OF THE PRINTING INDUSTRY - The student will be able to:

E	02.01	Trace the evolution of writing, kinds of communications, materials used and printing by identifying and recalling times, cultures and specific inventions.
E	02.02	Analyze the various reproduction processes such as: letterpress, gravure, offset lithography, screen, flexography, laser, electronic and inks and substrates associated with the processes.
E	02.03	Explain the organization and management of a printing company by identifying its organizational elements.
E	02.04	Demonstrate the use of a job information jacket.

03.0 DEMONSTRATE PROFICIENCY IN PERFORMING SKILLS RELATING TO PAPER CHARACTERISTICS - The student will be able to:

E	03.01	Identify characteristics of printing papers to specify basis weights, sizes, grains, finishes and grades.
E	03.02	Apply the formula for computing weight of paper stock.
E	03.03	Apply basic principles of offset lithography pertaining to interrelationships of paper (coated and uncoated and various grades within).
E	03.04	Identify basic principles of finishing/binding operations pertaining to grain, caliper and finish (coated or uncoated paper).

04.0 PERFORM ESTIMATING OPERATIONS - The student will be able to:

E	04.01	Identify the equipment and materials used in estimating operations, their parts and functions.
E	04.02	Explain the methods of reproduction illustrated by offset and letter press.
E	04.03	Explain the role and responsibility of the estimator in a printing plant.
E	04.04	Explain the sources of information available to the estimator.
E	04.05	Explain the factors that must be considered by the estimator in preparing an estimate such as standard production times, budgeted hour cost rates, outside purchased services, and material costs.
E	04.06	Define terms used in estimating.
E	04.07	Place in sequential order the progressive steps for preparing an estimate.
E	04.08	List the job tasks that usually appear on an estimating form in the sequential order in which they are usually performed.
E	04.09	Apply formula for computing weight of paper stock.
E	04.10	Calculate the optimal cut from a parent sheet.
E	04.11	Explain the principal characteristics of the different papers used in the printing process.
R	04.12	Prepare cost estimates utilizing given items, costs and specifications for a one-color, one-up job.
R	04.13	Prepare cost estimates utilizing given items, costs and specifications for a one-color, step job.
R	04.14	Prepare cost estimates utilizing given items, costs and specifications for a one-color, four-page job.
R	04.15	Prepare cost estimates utilizing given items, costs and specifications for a one-color, eight-page job.
A	04.16	Prepare cost estimates utilizing given items, costs and specifications for a 4 over 4, sixteen-page folded, saddle stitched job.

05.0 PERFORM GRAPHIC DESIGN OPERATIONS - The student will be able to:

E	05.01	Apply basic safety rules.
E	05.02	Follow safety procedures and legal requirements under OSHA or other federal and state regulatory agencies.
E	05.03	Identify the equipment and materials used in graphic design operations, their parts and functions and the safety rules relating to their operation.
R	05.04	Setup and operate graphic design operation tools and mechanical equipment.
	05.05	Evaluate when to use mechanical procedures compared to computer-aided procedures.
R	05.06	Setup and operate computer-aided design system.
R	05.07	Perform operator maintenance on graphic design equipment.
E	05.08	Prepare thumbnail layout.
E	05.09	Prepare rough layouts using both mechanical and computer-aided methods.
E	05.10	Prepare comprehensive layout including finish working dummy using both mechanical and computer-aided methods.
R	05.11	Crop, size, and proportion photographs, line drawings and other copy elements using both mechanical and computer-aided methods.
R	05.12	Copyfit and mark up (specify type sizes and styles) using both mechanical and computer-aided methods.

E	05.13	Evaluate basic elements of design; spatial relationships, color compatibility and contrast, emphasis and continuity of elements and specific needs of forms design.
E	05.14	Define typography terms for measurement.
E	05.15	Proofread type by a variety of means.
E	05.16	Define terms that deal with type identification.
E	05.17	Evaluate printed typed samples for visual spacing to identify kerning problems specific to letter combinations, type styles, faces and sizes and produce corrected samples.

06.0 PERFORM LINE PHOTOGRAPHY OPERATIONS - The student will be able to:

E	06.01	Apply basic safety rules.
E	06.02	Follow safety procedures and legal requirements under OSHA or other federal and state regulatory agencies.
E	06.03	Identify the equipment and materials used in line photography operations, their parts and functions and the safety rules relating to their operations.
E	06.04	Explain the photographic process.
E	06.05	Define terms relating to film construction.
E	06.06	Explain characteristics of film relating to speed, contrast and color.
E	06.07	Setup and operate line photography tools and equipment.
E	06.08	Perform operator maintenance on line photography equipment.
E	06.09	Solve lithographic scaling problems by analyzing facts, calculating proper sizes or percentages and stating solutions in appropriate terms.
E	06.10	Demonstrate the application and alignment of camera planes and working parts.
E	06.11	Operate a process camera by making various adjustments and by making a series of negatives to produce appropriate results using a variety of photography materials.
E	06.12	Demonstrate the application and limitation of the relationship between time, f/stop, exposure and light intensity by using a reflection density guide and interpreting results.
E	06.13	Define specific terms in relation to a process camera lens.
E	06.14	Define and explain the law of inverse squares, law of reflection, and law of refraction and light.
E	06.15	Demonstrate application and limitation of the relationship between bellows extension, exposure and f/stops by using formulas, charts, diaphragm control systems, and interpret results.
E	06.16	Demonstrate the mixing of photography chemicals for processing of photographic materials by identifying ratios, recognizing terms and different chemicals and mixing them when necessary.
E	06.17	Operate a vacuum frame and use a variety of films, copy and procedures.
E	06.18	Demonstrate application and procedures to produce film negatives and positives with a variety of films, equipment and conditions.
E	06.19	Demonstrate the use of a density guide by being able to explain changes in density and by confirming them in laboratory practice.
E	06.20	Define terms relating to photographic filters used in process photography.
E	06.21	Demonstrate the use of filters in laboratory projects.
E	06.22	Explain the need and value of establishing and maintaining standardized procedures.
E	06.23	Demonstrate proper cropping techniques.

07.0 PERFORM GRAPHIC ARTS HALFTONE OPERATIONS - The student will be able to:

E	07.01	Apply basic safety rules.
E	07.02	Follow safety procedures and legal requirements under OSHA or other federal and state regulatory agencies.
E	07.03	Identify the equipment and materials used in graphic arts halftone operations, their parts and functions and the safety rules relating to their operation.
E	07.04	Setup and operate graphic arts halftone tools and equipment.
E	07.05	Perform operator maintenance on graphic arts halftone equipment.
E	07.06	Calibrate a reflection densitometer to manufacturer's specifications.
E	07.07	Compare and contrast the function of the reflection densitometer with the Density Guide.
E	07.08	Solve a variety of exposure problems using an exposure computer.

08.0 PERFORM COLOR REPRODUCTION OPERATIONS - The student will be able to:

E	08.01	Apply basic safety rules.
E	08.02	Follow safety procedures and legal requirements under OSHA or other federal and state regulatory agencies.
E	08.03	Identify the equipment and materials used in color reproduction operations.
R	08.04	Setup, operate, and maintain color reproduction tools and equipment.
R	08.05	Apply the principles of visible light by constructing a spectrograph and placing the major subdivisions of white light in their proper position according to scientific theory.
R	08.06	Interpret manufacturer's film data sheets of various applicable films.
R	08.07	Apply the principles of densitometry and sensitometry to establish local laboratory standards.

09.0 PERFORM STRIPPING OPERATIONS - The student will be able to:

E	09.01	Apply basic safety rules.
E	09.02	Follow safety procedures and legal requirements under OSHA or other federal and state regulatory agencies.
E	09.03	Identify the equipment and materials used in stripping operations, their parts and functions and the safety rules relating to their operation.
E	09.04	Setup and operate stripping operation tools and equipment.
E	09.05	Perform operator maintenance on stripping operations equipment.
E	09.06	Define terms used in stripping.
E	09.07	Analyze the various approaches to stripping by comparing and contrasting preprinted masking sheets with conventional nonprinted masking sheets.
E	09.08	Identify the parts of a contact frame and point light source and explain their use.
E	09.09	Produce contacts using orthochromatic and duplicating film using transmission density guide and standard time and temperature development.
E	09.10	Apply basic principles of stripping using: T-square and triangle to align, position and tape film.
E	09.11	Prepare working dummy and produce a one-color, one-up layout.
E	09.12	Prepare working dummy and produce a one-color, multiple layout.

E	09.13	Explain methodology relating to step-and-repeat by choosing or recognizing the different procedures relating to particular situations.
R	09.14	Prepare working dummy and produce a one-color, step layout.
R	09.15	Prepare working dummy and produce a one-color, four-page layout.
R	09.16	Produce chokes, spreads, and knockouts.
R	09.17	Prepare working dummy and produce a one-color, eight-page layout.
R	09.18	Demonstrate the cutting of rubylith masks by trapping to key line negatives.
R	09.19	Prepare a working dummy and apply principles of a pin-register system to produce a multiple-burn exposure layout (halftone and screen tints).
R	09.20	Produce film composites of four color process with 1, 2 and 4 page layout.
R	09.21	Inspect and evaluate flats to original mechanical.
R	09.22	Apply the principles of computer-aided copy preparation using color separation, chokes and spreads, electronic masking and mechanical or electronically generated color proofs of output.

10.0 PERFORM PROOFING & PLATEMAKING OPERATIONS - The student will be able to:

E	10.01	Apply basic safety rules.
E	10.02	Follow safety procedures and legal requirements under OSHA or other federal and state regulatory agencies.
E	10.03	Identify the equipment and materials used in proofing and platemaking operations, their parts and functions and the safety rules relating to their operation.
E	10.04	Setup and operate proofing and platemaking tools and equipment.
E	10.05	Perform operator maintenance on proofing and platemaking equipment.
E	10.06	Produce proofs on diazo, silver and color proofing materials.
E	10.07	Inspect and evaluate proofs to original mechanical.
E	10.08	Identify, contrast and compare image carriers such as paper, photo direct, foil, and aluminum subtractive for run length and quality to suit customer specifications.
E	10.09	Process paper, photo direct, foil, and aluminum subtractive image carriers to manufacturer specifications.
E	10.10	Inspect and evaluate plates to proofs.
E	10.11	File, handle and retrieve flats and plates.

11.0 PERFORM OFFSET PRESS OPERATIONS - The student will be able to:

E	11.01	Apply basic safety rules.
E	11.02	Follow safety procedures and legal requirements under OSHA or other federal and state regulatory agencies.
E	11.03	Identify the equipment and materials used in offset presswork operations, their parts and functions and the safety rules relating to their operation.
R	11.04	Setup and operate offset press equipment.
R	11.05	Perform operator maintenance on offset press equipment.
E	11.06	Explain the basic principles of the lithographic process.
E	11.07	Compare and contrast single-sheet feeder, stream-fed, and web-fed systems.
E	11.08	Compare and contrast delivery systems for sheet-fed and web-fed systems.
E	11.09	Compare and contrast register systems such as side-guide, pull-guide, and head register.
E	11.10	Compare and contrast ink and moisture system for sheet-fed and web-fed systems.

E	11.11	Explain make-ready procedures in proper sequence to prepare for actual production.
R	11.12	Explain basic principles of offset lithography pertaining to dampening systems (ducted and continuous).
R	11.13	Apply basic principles of offset lithography pertaining to chemical components of fountain solutions (acid, alkaline, and neutral).
E	11.14	Apply basic principles of offset lithography pertaining to ph and conductivity control of fountain solutions and demonstrate the effect on the lithographic process.
A	11.15	Demonstrate the inking system by identifying each part and making proper adjustments.
R	11.16	Make ready and demonstrate feeder and delivery systems.
A	11.17	Demonstrate methods for achieving register by making machine adjustments.
R	11.18	Apply basic principles of offset press operations to produce work and turn, work and tumble and sheetwise printed products.

12.0 DEMONSTRATE PROFICIENCY IN PERFORMING FINISHING/BINDING OPERATIONS

The student will be able to:

E	12.01	Apply basic safety rules.
E	12.02	Follow safety procedures and legal requirements under OSHA or other federal and state regulatory agencies.
E	12.03	Identify the equipment and materials used in finishing/binding operations, their parts and functions, and the safety rules relating to their operation.
R	12.04	Setup, operate, and maintain bindery equipment.
A	12.05	Apply basic principles of finishing/binding operations pertaining to pre-press paper cutting, post press paper cutting and post bindery cutting (after folding, stitching, etc).
R	12.06	Apply basic principles of finishing/binding operations pertaining to folding configurations.
R	12.07	Apply basic principles of finishing/binding operations pertaining to folding.
R	12.08	Apply basic principles of finishing/binding operations pertaining to scoring and perforating.
E	12.09	Apply basic principles of finishing/binding operations pertaining to collating and gathering.
R	12.10	Apply basic principles of finishing/binding operations pertaining to binding alternatives (saddle, side, perfect, comb, spiral, case, etc.).
E	12.11	Apply basic principles of finishing/binding operations pertaining to adhesive binding (padding and fan-apart).
E	12.12	Apply basic principles of finishing/binding operations pertaining to packaging and identification.
E	12.13	Demonstrate methods of counting sheets (machine, measurement, weight, and rapid multiple-sheet counting by fives).
E	12.14	Hand and machine jog paper sheets.
E	12.15	Set up and operate a paper drill for standard looseleaf binder.
E	12.16	Describe die-cutting, embossing, foil stamping, and numbering systems.

CURRICULUM GUIDE FOR

PRINTING TECHNOLOGY

MODULE 1

EMPLOYABILITY SKILLS AND HABITS

Division of Vocational Education
State of Idaho
Boise, Idaho
1992

This is one of a series of modules which comprise the Idaho Curriculum Guide for Printing/Graphic Arts Technology. Each module contains a listing of the tasks, performance objectives, and enabling objectives required to enable a student to achieve competency in a specific system or field of study within the basic printing technician occupational field. The numbering of these modules is not intended to dictate an order of instruction or scheduling. The order in which these modules may be taught is determined by each institution and its instructors.

Each task describes an occupational activity which will result in a finished process or product. The tasks listed in each module represent the basic activities required of each student to demonstrate entry level competence for that specific system or field of study within the printing occupation. Individual records of student performance in completing the tasks listed within each module should be maintained.

Although some provision is made for basic mathematics and communication skills within this guide, they may not be adequate to meet the needs of individual students. Counseling, guidance, and diagnostic test results may indicate a need for further preparation in these areas. In such cases, instructors are encouraged to utilize the resources and personnel within the institution to improve or complement the instructional process.

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EMPLOYABILITY SKILLS AND HABITS

01.01 **TASK: Identify Employment Opportunities**

LEVEL E **PERFORMANCE OBJECTIVE: Given the information resources of a library, obtain and compile the information needed to seek a job.**

ENABLING OBJECTIVES:

1. **Identify the requirements for a job.**
2. **Investigate educational opportunities.**
3. **Investigate occupational opportunities.**
4. **Locate resources for finding employment.**
5. **Confer with prospective employers.**
6. **Identify job trends.**

01.02 **TASK: Apply Employment-Seeking Skills**

LEVEL E **PERFORMANCE OBJECTIVE: Given appropriate information, locate a job opportunity, prepare and take an interview for it, complete the required tests, forms and applications, and evaluate your response to the job opportunity.**

ENABLING OBJECTIVES:

1. **Locate a job opening.**
2. **Complete a resume.**
3. **Prepare for an interview.**
4. **Participate in an interview.**
5. **Complete tests required.**
6. **Complete forms required.**
7. **Complete an application letter.**
8. **Complete a follow-up letter.**
9. **Complete an acceptance letter.**
10. **Evaluate a job offer.**
11. **Evaluate a job rejection.**

01.03 **TASK: Interpret Employment Capabilities**

LEVEL E **PERFORMANCE OBJECTIVE: Given the assignment to explain how your capabilities make you employable, demonstrate how to match your skills and experience to a job you seek.**

ENABLING OBJECTIVES:

1. **Match your interest to job area.**
2. **Match your aptitudes to job area.**
3. **Verify your abilities.**
4. **Identify your immediate work goal.**
5. **Develop your career plan.**

01.04 TASK: Demonstrate Appropriate Work Behavior

LEVEL E **PERFORMANCE OBJECTIVE: Given the responsibility of an employee in a new job, demonstrate your knowledge of appropriate behavior in the work place.**

ENABLING OBJECTIVES:

1. **Exhibit dependability.**
2. **Demonstrate punctuality.**
3. **Follow rules and regulations.**
4. **Explain the consequences of dishonesty.**
5. **Complete assignments accurately and on time.**
6. **Control your emotions.**
7. **Take responsibility for your decisions and actions**
8. **Take pride in your work and be a loyal worker.**
9. **Learn to handle pressures and tensions.**
10. **Demonstrate ability to set priorities.**
11. **Demonstrate problem-solving skills.**

01.05 TASK: Maintain a Safe and Healthy Environment

LEVEL E **PERFORMANCE OBJECTIVE: Given the responsibility of an employee in a new job, demonstrate your knowledge of safety in the workplace.**

ENABLING OBJECTIVES:

1. **Comply with safety and health rules.**
2. **Select correct tools and equipment.**
3. **Utilize equipment correctly.**
4. **Use appropriate action during emergencies.**
5. **Maintain clean and orderly work area.**
6. **Demonstrate personal hygiene and cleanliness.**
7. **Identify and locate Material Safety Data Sheets (MSDS).**

1.06 TASK: Maintain a Business-Like Image

LEVEL 3 **PERFORMANCE OBJECTIVE: Given a responsibility to perform the duties of a new job, with a new employer, demonstrate a knowledge of the actions and behaviors which will project a business-like image.**

ENABLING OBJECTIVES:

1. **Participate in company or agency orientation.**
2. **Demonstrate knowledge of company or agency products and services.**
3. **Exhibit positive behavior.**
4. **Read current job-related publications.**
5. **Support and promote employer's company image and purpose.**
6. **Maintain appearance to comply with company standards.**

01.07 TASK: Maintain Working Relationships with Others

LEVEL E PERFORMANCE OBJECTIVE: Given the responsibility to perform the duties of a new job, with a new employer, demonstrate a knowledge of how to successfully work with others.

ENABLING OBJECTIVES:

1. Work productively with others.
2. Show empathy, respect and support for others.
3. Demonstrate procedures and assist others when necessary.
4. Recognize problems and work toward their solution.
5. Minimize the occurrence of problems.
6. Channel your emotional reactions in positive ways.

01.08 TASK: Communicate on the Job

LEVEL E PERFORMANCE OBJECTIVE: Given the responsibility to perform the duties of a new job, with a new employer, demonstrate a knowledge of how to successfully communicate with others.

ENABLING OBJECTIVES:

1. Read and comprehend written communications and information.
2. Use correct grammar.
3. Speak effectively with others.
4. Use job-related terminology.
5. Listen attentively.
6. Write legibly.
7. Use telephone etiquette.
8. Follow written and oral directions.
9. Ask questions.
10. Locate information in order to accomplish task.
11. Prepare written communication.
12. Utilize proper keyboarding skills.
13. Utilize computer skills.

01.09 TASK: Adapt to Change

LEVEL E PERFORMANCE OBJECTIVE: Given the responsibility to perform the duties of a new job, with a new employer, demonstrate a knowledge of how to adapt to change.

ENABLING OBJECTIVES:

1. Recognize the need to change.
2. Demonstrate a willingness to learn.
3. Demonstrate flexibility.
4. Participate in continuing education.
5. Seek challenge in the work place.
6. Adjust goals and plans when necessary.

01.10 TASK: Demonstrate a Knowledge of Business

LEVEL E **PERFORMANCE OBJECTIVE: Given the responsibility to perform the duties of a new job, with a new employer, demonstrate a knowledge of the role of that business, its employees, and the free enterprise system.**

ENABLING OBJECTIVES:

1. **Explain the role of business in the free enterprise system.**
2. **List the responsibilities of employees.**
3. **Identify the responsibilities of managers and employers.**
4. **Discuss the opportunities for business ownership or management.**
5. **Describe the planning required to start a business.**
6. **Discuss the importance of business meetings.**

01.11 TASK: Perform Necessary Mathematical Skills

LEVEL E **PERFORMANCE OBJECTIVE: Given problems associated with printing application, solve accurately within a specified timeline.**

ENABLING OBJECTIVES:

1. **Add and subtract whole numbers, decimals and fractions.**
2. **Multiply and divide whole numbers, decimals and fractions.**
3. **Convert between standard American units of measure.**
4. **Convert between standard American units and metric units.**
5. **Use printer's measurements to compute inches, fractions, points, picas, decimals, percentages, and proportions.**

CURRICULUM GUIDE FOR

PRINTING TECHNOLOGY

MODULE 2

INTRODUCTORY ASPECTS OF THE PRINTING INDUSTRY

Division of Vocational Education
State of Idaho
Boise, Idaho
1992

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INTRODUCTORY ASPECTS OF THE PRINTING INDUSTRY

02.01 TASK: Trace the evolution of writing, kinds of communications, materials used, and printing by identifying and recalling times, cultures and specific inventions

PERFORMANCE OBJECTIVE: Given appropriate resource materials, the student will trace the evolution of the printing industry.

ENABLING OBJECTIVES:

1. List major events in chronological order in the history of printing and communications.
2. Describe materials used in early printing processes.
3. List major equipment or inventions in the history of writing.
4. Discuss the impact of the microprocessor on the printing industry.

02.02 TASK: Analyze the various reproduction processes such as: letterpress, gravure, offset lithography, screen, flexography, laser electronic and inks and substrates associated with the processes

PERFORMANCE OBJECTIVE: Given appropriate resource material, the student will analyze various production processes used in today's printing industry.

ENABLING OBJECTIVES:

1. Describe the differences between various graphic reproduction processes.
2. Identify the type of equipment associated with various graphic reproduction processes.
3. Describe the history of inks and substrates.
4. Associate printing applications to types of inks and substrates.

02.03 TASK: Explain the organization and management of a printing company by identifying its organizational elements

PERFORMANCE OBJECTIVE: Given appropriate resource materials and opportunities to visit a variety of printing facilities, the student will identify the organizational elements of a typical printing business.

ENABLING OBJECTIVES:

1. Identify various organizational components of a printing company.
2. Explain the relationship of the various managerial and operational elements of a printing company.
3. Establish a sequence of job operations.
4. Design an organizational chart and describe the management functions of the elements.

02.04 **TASK: Use a job information jacket**

PERFORMANCE OBJECTIVE: Given a job jacket used in the printing industry, the student will complete all the data required to perform a print job.

ENABLING OBJECTIVES:

1. **Determine information required to complete a job.**
2. **Describe the elements of a job information jacket.**
3. **Complete a job information jacket with all required data.**

CURRICULUM GUIDE FOR

PRINTING TECHNOLOGY

MODULE 3

PERFORMING SKILLS RELATING TO PAPER CHARACTERISTICS

Division of Vocational Education
State of Idaho
Boise, Idaho
1992

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PERFORMING SKILLS RELATING TO PAPER CHARACTERISTICS

03.01 **TASK: Identify Characteristics of Printing Papers to Specify Basis Weights, Sizes, Grains, Finishes and Grades**

PERFORMANCE OBJECTIVE: Given appropriate material and paper stock, the student will identify characteristics of papers used in the printing industry.

ENABLING OBJECTIVES:

1. **Define terms associated with paper.**
2. **Compile a reference notebook of samples and descriptions of paper types.**
3. **Differentiate between paper by characteristics.**
4. **Identify characteristics of printing papers and specify basic weights, sizes, and grades.**

03.02 **TASK: Apply Formula for Computing Weight of Paper Stock**

PERFORMANCE OBJECTIVE: Given basis weight and basis size of paper stock, the student will apply the formula to compute weight of paper.

1. **Define basis weight.**
2. **Explain the use of basis weight and basis size.**
3. **Apply formula for computing weight of paper stock.**

03.03 **TASK: Apply Basic Principles of Offset Lithography Pertaining to Interrelationships of Paper (Coated and Uncoated and Various Grades Within)**

PERFORMANCE OBJECTIVE: Given resource material and various paper samples, the student will select paper for lithographic applications.

1. **Differentiate between coated and uncoated paper.**
2. **Explain reasons for selecting various paper types.**
3. **Describe the effects of offset lithography on various types and grades of paper.**

03.04 **TASK: Identify Basic Principles of Finishing/Binding Operations Pertaining to Grain, Caliper and Finish (Coated or Uncoated Paper)**

PERFORMANCE OBJECTIVE: Given resource material, the student will determine what effect types of paper have on finishing/binding operations.

1. **Explain the effects of grain, caliper and finish paper to each aspect of finishing and binding operations.**

CURRICULUM GUIDE FOR

PRINTING TECHNOLOGY

MODULE 4

ESTIMATING OPERATIONS

Division of Vocational Education
State of Idaho
Boise, Idaho
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ESTIMATING OPERATIONS

04.01 TASK: Identify the Equipment and Materials Used in Estimating Operations, their Parts and Functions

PERFORMANCE OBJECTIVE: Given job specifications, the student will list the equipment and materials needed to prepare a cost estimate.

ENABLING OBJECTIVES:

1. **Demonstrate knowledge of how to read and understand price lists.**
2. **Demonstrate knowledge of the Franklin Estimating Book and software.**
3. **Demonstrate knowledge of the use of a 10 key adding machine or calculator.**
4. **Demonstrate ability to read a ruler to 1/16 of an inch.**

04.02 TASK: Explain the Methods of Reproduction Illustrated by Offset and Letter Press

PERFORMANCE OBJECTIVE: The student will describe the difference between the letterpress and offset press methods of reproduction.

ENABLING OBJECTIVES:

1. **Describe the similarities and differences between offset press and letterpress printing.**

04.03 TASK: Explain the Role and Responsibility of the Estimator in a Printing Plant

PERFORMANCE OBJECTIVE: The student will describe the work responsibilities and define the specific work duties of an estimator in a print shop.

ENABLING OBJECTIVES:

1. **Describe working conditions for an estimator in the print shop.**
2. **Describe needed education and work experiences an estimator should have to be successful.**
3. **Describe the job responsibilities of an estimator.**
4. **List specific details that estimators would have to know about the following:**
   a. **Art design and composition**
   b. **Layout**
   c. **Camera and stripping**
   d. **Proofing and plating**
   e. **Presses**
   f. **Finishing and bindery**
   g. **Computer estimating**
   h. **Basic hourly rates**
   i. **Paper**
   j. **Imposition**

04.04 **TASK: Explain the Sources of Information Available to the Estimator**

PERFORMANCE OBJECTIVE: The student will explain the various sources of information available to job estimators and describe how they are used.

ENABLING OBJECTIVES:

1. **Explain how cost lists are determined.**
2. **Explain the purpose for the Franklin Guide and how it is used in the printing industry.**
3. **Describe the Basic Hourly Rate process for estimating jobs.**
4. **Describe other estimating processes.**
5. **Explain how computer programs are used for job estimating.**

04.05 **TASK: Explain the Factors that must be Considered by the Estimator in Preparing an Estimate Such as Standard Production Times, Budgeted Hourly Cost Rates, Outside Purchased Services, and Material Costs**

PERFORMANCE OBJECTIVE: The student will explain the factors involved in the Basic Hourly Rate estimating process.

ENABLING OBJECTIVES:

1. **List the steps followed in preparing a job estimate.**
2. **Describe how standard production times are determined.**
3. **Explain how and when outside services are purchased.**
4. **Describe the elements used in establishing a Budgeted Hourly Rate process for estimating a job.**
5. **Describe the elements used in establishing costs of materials for estimating a print job.**

04.06 **TASK: Define Terms Used in Estimating**

PERFORMANCE OBJECTIVE: Given a list of terms common to a printing estimator, the student will define the terms.

ENABLING OBJECTIVES:

1. **Define terms asssociated with estimating a print job.**

04.07 **TASK: Place in Sequential Order the Progressive Steps for Preparing an Estimate**

PERFORMANCE OBJECTIVE: Given a list of steps for preparing a printing estimate, the student will arrange them in the proper sequence.
ENABLING OBJECTIVE:

1. **Describe the steps needed to prepare a job estimate.**
2. **Arrange in sequential order the steps needed to prepare a job estimate.**

04.08 TASK: List the Job Tasks that Usually Appear on an Estimating Form in the Sequential Order in Which they are Usually Performed

PERFORMANCE OBJECTIVE: Given a hypothetical job, the student will list in order the steps needed to complete an estimate that will be profitable to the print shop.

ENABLING OBJECTIVES:

1. **List the steps in a job estimate in sequential order.**
2. **Describe the steps needed to perform a job estimate.**

04.09 TASK: Apply Formula for Computing Weight of Paper

PERFORMANCE OBJECTIVE: Given job specifications requiring a certain grade and quantity of paper, the student will determine the weight of the paper.

ENABLING OBJECTIVES:

1. **List the four categories of paper.**
2. **Define the basis sizes of the four categories.**

04.10 TASK: Calculate the Optimal Cut From a Parent Sheet

PERFORMANCE OBJECTIVE: Given the size of a parent sheet and the size of the press sheet, the student will calculate the optimal cut from the parent sheet with the least amount of waste.

ENABLING OBJECTIVES:

1. **Perform cross multiplication procedure.**
2. **Diagram the parent stock with lines indicating cut press sheets and off-cut.**

04.11 TASK: Explain the Principle Characteristics of the Different Papers used in the Printing Process

PERFORMANCE OBJECTIVE: Given a list of the four paper categories, the student will describe the use for each category of paper in the printing process, based on the principle characteristics of each.

ENABLING OBJECTIVES:

1. **List the grades of writing papers and describe their use.**
2. **List the grades of book papers and describe their use.**
3. **List the grades of cover papers and describe their use.**
4. **List the grades of bristol papers and describe their use.**
5. **List at least one other category of paper and describe its use.**

04.12 TASK: Prepare Cost Estimates Utilizing Given Items, Costs and Specifications for a One-Color, One-Up Job

PERFORMANCE OBJECTIVE: Given a job ticket with customer specifications, the student will prepare an estimate that will reflect a commonly accepted industry profit standard for a one-color, one-up job.

ENABLING OBJECTIVES:

1. **Describe the factors to be considered when determining job costs.**
2. **Define the quality level, ordinary or good.**
3. **Determine the cost for 1000 sheets of the stock to be used from wholesale paper book.**
4. **Find the cost for the quantity ordered.**
5. **Determine any add-on charges.**

04.13 TASK: Prepare Cost Estimates Utilizing Given Items, Costs and Specifications for a One-Color, Step Job

PERFORMANCE OBJECTIVE: Given a job ticket with customer specifications, the student will prepare an estimate that will reflect a commonly accepted industry profit standard for a one-color, step job.

ENABLING OBJECTIVES:

1. **Describe the factors to be considered when determining job costs.**
2. **Define the quality level, ordinary or good.**
3. **Determine the cost for 1000 sheets of the stock to be used from wholesale paper book.**
4. **Find the cost for the quantity ordered.**
5. **Determine any add-on charges.**

04.14 TASK: Prepare Cost Estimates Utilizing Given Items, Costs and Specifications for a One-Color, Four-Page Job

PERFORMANCE OBJECTIVE: Given a job ticket with customer specifications, the student will prepare an estimate that will reflect a commonly accepted industry profit standard for a one-color, four-page job.

ENABLING OBJECTIVES:

1. **Describe the factors to be considered when determining job costs.**
2. **Define the quality level, ordinary or good.**
3. **Determine the cost for 1000 sheets of the stock to be used from wholesale paper book.**

4. **Find the cost for the quantity ordered.**
5. **Determine any add-on charges.**

04.15 **TASK: <u>Prepare Cost Estimates Utilizing Given Items, Costs and Specifications for a One-Color, Eight-Page Job</u>**

PERFORMANCE OBJECTIVE: Given a job ticket with customer specifications, the student will prepare an estimate that will reflect a commonly accepted industry profit standard for a one-color, eight-page job.

ENABLING OBJECTIVES:

1. **Describe the factors to be considered when determining job costs.**
2. **Define the quality level, ordinary or good.**
3. **Determine the cost for 1000 sheets of the stock to be used from wholesale paperbook.**
4. **Find the cost for the quantity ordered.**
5. **Determine any add-on charges.**

04.16 **TASK: <u>Prepare Cost Estimates Utilizing Given Items, Costs and Specifications for a 4 Over 4, Sixteen-Page Folded, Saddle Stitched Job</u>**

PERFORMANCE OBJECTIVE: Given a job ticket with customer specifications, the student will prepare an estimate that will reflect a commonly accepted industry profit standard for a 4 over 4, sixteen page, folded, saddle stitched job.

ENABLING OBJECTIVES:

1. **Describe the factors to be considered when determining costs.**
2. **Define the quality level, ordinary or good.**
3. **Determine the cost for 1000 sheets of the stock to be used from wholesale paper book.**
4. **Find the cost for the quantity ordered.**
5. **Determine any add-on charge.**

CURRICULUM GUIDE FOR

PRINTING TECHNOLOGY

MODULE 5

GRAPHIC DESIGN OPERATIONS

Division of Vocational Education
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GRAPHIC DESIGN OPERATIONS

05.01 TASK: Apply Basic Safety Rules

PERFORMANCE OBJECTIVE: Given the appropriate resource materials and graphic design equipment, the student will be able to apply the basic safety rules for operation and use with 100% accuracy.

ENABLING OBJECTIVES:

1. **Describe safety procedures and practices relating to graphic design equipment and tools.**
2. **Demonstrate mastery of safety precautions at all times.**
3. **Recognize potential safety hazards.**
4. **Identify potential safety hazards.**
5. **Correct potential safety hazards.**

05.02 TASK: Follow Safety Procedures and Legal Requirements Under OSHA or Other Federal and State Regulatory Agencies

PERFORMANCE OBJECTIVE: Given the necessary pamphlets and safety materials pertaining to OSHA, federal, and state regulations required by these governing agencies, the student will explain safety regulations pertaining to graphic design operations.

ENABLING OBJECTIVES:

1. **Describe safety precautions as stipulated by OSHA, federal and state regulations.**
2. **Demonstrate safety procedures and practices relating to graphic design equipment and tools.**
3. **Demonstrate mastery of stipulated safety precautions at all times.**
4. **Recognize potential safety hazards.**
5. **Identify potential safety hazards.**
6. **Correct potential safety hazards.**

05.03 TASK: Identify the Equipment and Materials Used in Graphic Design Operations, their Parts and Functions, and the Safety Rules Relating to Their Operation

PERFORMANCE OBJECTIVE: Given the graphic design equipment list and materials used, the student will be able to identify by name, use and state the safety rules relating to the operation of equipment.

ENABLING OBJECTIVES:

1. **Demonstrate safety operations.**
2. **Identify various graphic design tools.**

3. Identify the parts of the various graphic design tools.
4. Explain the functions of the various graphic design tools.
5. Describe the safety precautions for graphic design equipment.
6. Identify various pieces of graphic design equipment.
7. Identify the parts of the various pieces of graphic design materials.
8. Explain the required safety factors when handling graphic design materials.
9. Demonstrate the required safety factors when handling graphic design materials.

05.04 TASK: Setup and Operate Graphic Design Operation Tools and Mechanical Equipment

PERFORMANCE OBJECTIVE: Given the proper information, appropriate instruction, graphic design tools, and equipment, the student will be able to setup and operate the graphic design tools and mechanical equipment.

ENABLING OBJECTIVES:

1. Assemble all required components.
2. Layout spaces for text, illustrations, photos, headlines, artwork, rules, etc. on layout board.
3. Cut, wax and place text galleys.
4. Cut, crop, wax and place illustrations (clipart) and artwork.
5. Crop, wax and place photographs.
6. Create, wax and place headline types.
7. Use border tape as necessary.

05.05 TASK: Evaluate When to Use Mechanical Procedures Compared to Computer-aided Procedures

PERFORMANCE OBJECTIVE: Given guidelines for current cost analysis information, the student will be able to evaluate when to use mechanical graphic design procedures and when to use computer-aided graphic design materials.

ENABLING OBJECTIVES:

1. Determine customer needs and expectations of the product.
2. Compare costs of mechanical versus computer-aided procedures.
3. Compare benefits of mechanical versus computer-aided procedures.
4. Determine which procedure best meets the client's needs.

05.06 TASK: Setup and Operate Computer Design Equipment

PERFORMANCE OBJECTIVE: Given the appropriate graphic design computer hardware and software, the student will be able to setup and operate the given equipment.

ENABLING OBJECTIVES:

1. **Describe the procedure to "boot" an applications software program.**
2. **Initialize a storage disk using the appropriate disk operating system.**
3. **Determine graphic design format.**
4. **Place document components in proper location on screen.**
5. **Proofread screen copy.**
6. **Print draft copy.**
7. **Proofread, revise and edit draft copy.**
8. **Save the document on storage disk for future use.**
9. **Print final copy.**
10. **Demonstrate the correct procedure for shutting down a computer when a graphic design program has been utilized.**

05.07 TASK: Perform Operator Maintenance on Graphic Design Equipment

Performance objective: Given the necessary maintenance materials and shop manuals for the graphic design equipment, the student will be able to perform operator maintenance to manufacturer's specifications.

ENABLING OBJECTIVES:

1. **Locate all necessary lubrication points as identified in shop manuals.**
2. **Demonstrate maintenance ability on located lubrication points.**
3. **Demonstrate safety precautions during lubrication processes.**
4. **Locate all necessary wear and adjustment points on graphic design equipment as identified in shop manuals.**
5. **Demonstrate maintenance ability on located wear and adjustment points.**
6. **Demonstrate safety precautions during wear and adjustment point inspections.**

05.08 TASK: Prepare Thumbnail Layout

PERFORMANCE OBJECTIVE: Given preplanning information, the student will be able to prepare thumbnail sketches into a thumbnail layout within the assigned guidelines.

ENABLING OBJECTIVES:

1. **Identify preplanning steps.**
2. **Discuss the following in regards to developing a thumbnail layout:**
   a. **Objective**

b. Audience
c. Tone
d. Style
e. Size
f. Format

3. Correlate timeline with assigned schedule.
4. Identify the required graphic design materials.
5. Apply creative thinking skills to develop thumbnail layouts.
6. Arrange type, photos, and illustration "doodles" by location and size proportion.
7. Select the appropriate thumbnail layout which best meets the objective and serves the chosen audience.

05.09 TASK: Prepare Rough Layouts Using both Mechanical and Computer-aided Methods

PERFORMANCE OBJECTIVE: Given thumbnail layouts, mechanical and computer-aided graphic design tools/equipment, the student will be able to prepare rough layouts.

ENABLING OBJECTIVES:

1. Correlate established timeline with assigned schedule.
2. Detail thumbnail artwork and photograph sketches using mechanical and computer-aided graphic design equipment.
3. Draw display type in correct size, style, and position using mechanical and computer-aided graphic equipment.
4. Represent smaller type with small lines in correct location and correct column width using mechanical and computer-aided graphic design equipment.
5. Select the appropriate rough layout prepared using either mechanical or computer aided graphic design equipment.

05.10 TASK: Prepare Comprehensive Layout Including Finish Working Dummy Using both Mechanical and Computer-Aided Methods

PERFORMANCE OBJECTIVE: Given the rough layout, mechanical and computer-aided graphic design tools/equipment, the student will be able to prepare a comprehensive layout.

ENABLING OBJECTIVES:

1. Critique a rough layout for exactness, quality, and purpose.
2. Revise the rough layout as needed using mechanical or computer-aided graphic design equipment.
3. Develop the comprehensive layout from the revisions made using mechanical or computer-aided graphic design equipment.
4. Evaluate the comprehensive layout.

05.11 TASK: Crop, Size, and Proportion Photographs, Line Drawings, and Other Copy Elements Using Both Mechanical and Computer-Aided Graphic Design Equipment

PERFORMANCE OBJECTIVE: Given the necessary photographs, line drawings, and other copy elements, plus mechanical and computer-aided graphic design equipment, the student will be able to perform the cropping, sizing, and proportioning as required.

ENABLING OBJECTIVES:

1. Define cropping.
2. Define sizing.
3. Define proportioning.
4. Explain why photographs, line drawings, and other copy elements need to the cropped.
5. Compare reduced sizes to original copy element sizes.
6. Examine the content of the original copy element requiring cropping.
7. Determine the area of the original copy element to be cropped.
8. Compute necessary reductions or enlargements with the appropriate proportion scales.
9. Operate mechanical graphic design equipment to draw in crop marks.
10. Operate computer-aided graphic design equipment to crop photographs, line drawings, or other copy elements.

05.12 TASK: Copyfit and Mark Up (Specify Type Sizes and Styles) Using both Mechanical and Computer-Aided Methods

PERFORMANCE OBJECTIVE: Given the necessary information, mechanical and computer-aided graphic design equipment, and the designated job, the student will be able to copyfit and mark up the particular job in question.

ENABLING OBJECTIVES:

1. Define copyfit.
2. Define copy markup.
3. Operate mechanical graphic design equipment to:
   a. Specify type size for the job.
   b. Specify type style for the job.
   c. Specify type line length.
   d. Specify line spacing for the job.
4. Operate computer-aided graphic design equipment to:
   a. Specify type size for the job.
   b. Specify type style for the job.
   c. Specify type line length.
   d. Specify line spacing for the job.

05.13 TASK: Evaluate Basic Elements of Design: Spatial Relationships, Color Compatibility and Contrast, Emphasis and Continuity of Elements and Specific Needs of Forms Design

PERFORMANCE OBJECTIVE: Given necessary information, the student will be able to evaluate the basic elements of design and the application of those design elements.

ENABLING OBJECTIVES:

1. **Describe the rules and principles of graphic design pertaining to balance, unity, color, etc. .**
2. **Describe the difference between display faces and text faces.**
3. **Correlate the differences between monospaced type and proportional type.**
4. **Define typeface terminology terms.**
5. **Explain the relevance of the rules and principles of graphic design.**
6. **Demonstrate the proper use of the elements of design/art.**
7. **Evaluate layouts based on the basic elements of design.**

05.14 TASK: Define Typography Terms for Measurement

PERFORMANCE OBJECTIVE: Given the appropriate information and directions, the student will be able to define and use the various measurement principles for typographical measurement of type.

ENABLING OBJECTIVES:

1. **Define the term "point" for measurement of type.**
2. **Contrast the term "point" with an equivalent inch size.**
3. **Define the term "pica" for measurement of type.**
4. **Compare the term "pica" with equivalent inch and point sizes.**
5. **Define the term "em" for measurement of type.**
6. **Compare the term "em" measurement with point size.**
7. **Define the term "en" for measurement of type.**
8. **Compare the "en" measurement with the "em" and "point" sizes.**
9. **Define "line leading" for measurement of type.**
10. **Correlate "line leading" and "line spacing."**
11. **Correlate "characters per inch" (cpi) and "dots per inch" (dpi).**

05.15 TASK: Proofread Type by a Variety of Means

Performance objective: Given an acceptable chart of proofreader's marks, the student will be able to proofread type by a variety of means.

ENABLING OBJECTIVES:

1. **Distinguish the various methods by which type composition may be presented.**
2. **Identify the need for the space in making corrections.**
3. **Define proofreading terms.**

4. Explain the need for proof categories.
5. Demonstrate the appropriate use of proofreader's marks.

05.16 TASK: Define Terms That Deal With Type Identification

PERFORMANCE OBJECTIVE: Given the necessary guidelines of type purpose and terms of type identification, the student will be able to define type identification terms.

ENABLING OBJECTIVES:

1. Distinguish between the two main design features of type.
2. Explain the difference between display faces and text faces.
3. Correlate the differences between monospaced type and proportional type.
4. Define typeface terms.
5. Define typographical composition terms.
6. Compare typesetting terms in relation to purpose and use.

05.17 TASK: Evaluate Printed Typed Samples for Visual Spacing to Identify Kerning Problems Specific to Letter Combinations, Type Styles, Faces and Sizes and Produce Corrected Samples

PERFORMANCE OBJECTIVE: Given samples of printed material, the student will evaluate the samples and produce corrected copy.

ENABLING OBJECTIVES:

1. Define kerning.
2. Describe letter combinations.
3. Discuss the relationship of type style, face and size.
4. Construct the typographical hierarchy based on typeface, size, etc. for the document body copy.
5. Specify type variations for such items as:
   a. Headline and/or chapter titles.
   b. A-level and B-level subheads.
   c. Bullets and Sub-bullets.
   d. Caption heads (title of graphics).
   e. Caption text.
6. Categorize the normal text and variations by changing two or more of the following:
   a. Font-often a sans serif/serif switch.
   b. Size--larger or smaller by at least two points.
   c. Weight or style--variations of bold, italic, small caps, etc.
   d. Indentions--tabbing three, four, or five spaces.
   e. Spacing--before and/or after.
   f. Design elements--bullets, boxes, rules.
7. Determine appropriate text font for ease of readability.
8. Select an eye-catching font for headings.
9. Explain why it is important to minimize use of font families, sizes, and styles.

10. **Explain why typographers retain simple text for charts, graphs, and tables.**
11. **Organize the document for success versus visual flair.**
12. **Develop a layout plan that reflects the importance of the chosen document elements.**

CURRICULUM GUIDE FOR

PRINTING TECHNOLOGY

MODULE 6

LINE PHOTOGRAPHY OPERATIONS

Division of Vocational Education
State of Idaho
Boise, Idaho
1992

This is one of a series of modules which comprise the Idaho Curriculum Guide for Printing/Graphic Arts Technology. Each module contains a listing of the tasks, performance objectives, and enabling objectives required to enable a student to achieve competency in a specific system or field of study within the basic printing technician occupational field. The numbering of these modules is not intended to dictate an order of instruction or scheduling. The order in which these modules may be taught is determined by each institution and its instructors.

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The benefits to students and institutions derived from this curriculum guide should be considerable. Articulation of students from secondary to post-secondary programs will be aided through the use of a single curriculum guide. The guide provides a tool for evaluation of local curriculum and programs. The guide may be used in a flexible manner to assure that printing programs meet the needs of local business and industry.

It is the goal of this program guide to provide a level of instruction which will impart entry level employment skills. Students should be carefully counseled on the importance of attaining competency in the tasks assigned. As in virtually all occupations today, printing technicians will require periodic up-dating and review in the future. It is important that each student understand that meeting the program standards is essential not only to obtain employment today but also to have a base upon which to retain employment in the future.

PERFORM LINE PHOTOGRAPHY OPERATIONS

06.01 TASK: Apply Basic Safety Rules

PERFORMANCE OBJECTIVE: Given the appropriate resource materials and line photography equipment, the student will be able to apply the basic safety rules for operation and use with 100% accuracy.

ENABLING OBJECTIVES:

1. **Describe safety procedures and practices relating to line photography equipment and tools.**
2. **Demonstrate mastery of safety precautions at all times.**
3. **Recognize potential safety hazards.**
4. **Identify potential safety hazards.**
5. **Correct potential safety hazards.**

06.02 TASK: Follow Safety Procedures and Legal Requirements Under OSHA or Other Federal and State Regulatory Agencies

PERFORMANCE OBJECTIVE: Given the necessary pamphlets and safety materials pertaining to OSHA, federal, and state regulations required by these governing agencies, the student will explain safety regulations pertaining to line photography operations.

ENABLING OBJECTIVES:

1. **Describe safety precautions as stipulated by OSHA, federal and state regulations.**
2. **Demonstrate safety procedures and practices relating to line photography equipment and tools.**
3. **Demonstrate mastery of stipulated safety precautions at all times.**
4. **Recognize potential safety hazards.**
5. **Identify potential safety hazards.**
6. **Correct potential safety hazards.**

06.03 TASK: Identify the Equipment and Materials Used in Line Photography Operations, Their Parts and Functions and the Safety Rules Relating to Their Operations

PERFORMANCE OBJECTIVE: Given resource materials and equipment, the student will correctly identify and describe the equipment and materials used in line photography operations, their parts and functions and describe and demonstrate safety rules relating to their use and operation.

ENABLING OBJECTIVES:

1. **Describe the safety procedures and practices relating to line photography equipment and materials.**

2. Define terms associated with line photography operations.
3. Identify the equipment and materials used in line photography operations.
4. Describe the functions of equipment and materials used in line photography operations.

06.04 TASK: Explain the Photographic Process

PERFORMANCE OBJECTIVE: Given resource materials and equipment, the student will correctly identify and describe the principles of the photographic process.

ENABLING OBJECTIVES:

1. Define terms associated with the photographic process.
2. Describe safety procedures relating to the photographic process.
3. Describe the principles of the photographic process.
4. Define terms associated with line photography.
5. Define terms relating to electromagnetic energy and spectrum.

06.05 TASK: Define Terms Relating to Film Construction

PERFORMANCE OBJECTIVE: Given resource materials and equipment, the student will correctly identify and describe the terms relating to film construction.

ENABLING OBJECTIVES:

1. Define terms relating to film construction.
2. Describe the process of film construction.

06.06 TASK: Explain Characteristics of Film Relating to Speed, Contrast and Color

PERFORMANCE OBJECTIVE: Given resource materials and equipment, the student will correctly identify and describe the characteristics of film relating to speed, contrast and color.

ENABLING OBJECTIVES:

1. Describe the characteristics of film speed.
2. Describe the characteristics of film contrast.
3. Describe the characteristics of film color.

06.07 TASK: Set Up and Operate Line Photography Tools and Equipment

PERFORMANCE OBJECTIVE: Given line photography tools and equipment, film, developing chemicals and equipment, the student will operate line photography tools and equipment to meet industry quality standards.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Perform darkroom film developing set up procedures.**
3. **Perform line photography equipment set up procedures.**
4. **Expose and develop film.**

06.08 TASK: Perform Operator Maintenance on Line Photography Equipment

PERFORMANCE OBJECTIVE: Given line photography equipment manufacturer's operator manuals and maintenance supplies, the student will perform operator maintenance to comply to manufacturer's recommendations.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Discuss the importance of proper maintenance.**
3. **Perform photography equipment maintenance as prescribed by the equipment manufacturer.**

06.09 TASK: Solve Lithographic Scaling Problems by Analyzing Facts, Calculating Proper Sizes or Percentages and Stating Solutions in Appropriate Terms

PERFORMANCE OBJECTIVE: Given resource materials and equipment used in lithographic scaling, the student will correctly size lithographic materials to be reproduced to the proper percentage and state the solution in appropriate terms.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Discuss various methods of sizing line art and copy.**
3. **Check copy for reproduction specifications.**
4. **Size line art for proper percentage.**
5. **Size copy to be reproduced as halftones for proper percentage.**

06.10 TASK: Demonstrate the Application and Alignment of Camera Planes and Working Parts

PERFORMANCE OBJECTIVE: Given resource materials and equipment the student will correctly demonstrate the alignment of the camera planes and working parts.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Explain camera film plane.**
3. **Identify the working parts of the camera.**
4. **Demonstrate the alignment of the camera planes.**

06.11 TASK: Operate a Process Camera by Making Various Adjustments and by Making a Series of Negatives to Produce Appropriate Results Using a Variety of Photographic Materials.

PERFORMANCE OBJECTIVE: Given a process camera, film, darkroom chemistry, developing equipment, and copy to be reproduced, the student will make a series of negatives on a variety of photographic materials at reductions, enlargements and at 100% to conform to industry quality standards.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Perform darkroom film developing set up procedures.**
3. **Perform camera set up procedures.**
4. **Expose and develop the film.**
5. **Demonstrate the use of a variety of special films, including litho, pan, rapid access, and room light.**

06.12 TASK: Demonstrate the Relationship Between Time, F/Stop, Exposure and Light Intensity by Using a Reflection Density Guide and Interpreting Results

PERFORMANCE OBJECTIVE: Given a process camera, film, copy to be reproduced, film developing chemicals and equipment, the student will correctly demonstrate the relationship between time, f/stop, exposure and light intensity by using a reflection density guide and interpret the results.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Perform darkroom film developing set up procedures.**
3. **Discuss the relationship of F/stop, light intensity and exposure.**
4. **Perform camera set up procedures.**
5. **Make test exposures using the step off procedure and process exposed materials.**

06.13 TASK: Define Specific Terms in Relation to a Process Camera Lens

PERFORMANCE OBJECTIVE: Given resource materials and equipment, the student will correctly define specific terms in relation to a process camera lens.

ENABLING OBJECTIVES:

1. **List the parts of a process camera lens.**
2. **Describe the functions of a process camera lens.**
3. **Define terms associated with a process camera lens.**
4. **Explain lens aberrations and flare.**

06.14 TASK: Define and Explain the Law of Inverse Squares, Law of Reflection, and Law of Refraction and Light

PERFORMANCE OBJECTIVE: Given resource materials and equipment, the student will correctly define and explain the law of inverse squares, law of reflection, and law of refraction and light.

ENABLING OBJECTIVES:

1. **Explain inverse squares as related to the process camera.**
2. **Explain the law of reflection as related to the process camera.**
3. **Define the law of refraction and light.**

06.15 TASK: Demonstrate Application and Limitation of the Relationship Between Bellows Extension, Exposure and F/Stops by Using Formulas, Charts, Diaphragm Control Systems, and Interpret Results

PERFORMANCE OBJECTIVE: Given a camera, film, film developing equipment and chemicals, the student will correctly demonstrate the application and limitation of the relationship between bellows extension, exposure and f/stops by using formulas, charts, diaphragm control systems, and interpret results.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Perform darkroom film developing set up procedures.**
3. **Perform camera set up procedures.**
4. **Make test exposures using the step off procedure .**
5. **Process exposed materials.**

06.16 TASK: Demonstrate the Mixing of Photography Chemicals for Processing of Photographic Materials by Identifying Ratios, Recognizing Terms and Different Chemicals and Mixing Them as Necessary

PERFORMANCE OBJECTIVE: Given darkroom chemicals and equipment, the student will demonstrate the mixing of the photography chemicals, the correctly identify ratios, correctly recognize terms of different chemicals and be able mix the chemicals when necessary.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Identify various chemicals used in the photographic process.**
3. **Describe chemical applications in the photographic process.**
4. **Define ratios as related to darkroom chemistry.**
5. **Define terms as related to darkroom chemistry.**
6. **Mix chemicals following manufacturer's recommendations.**

06.17 TASK: Demonstrate Application and Procedures to Produce Film Negatives and Positives with a Variety of Films, Equipment and Conditions

PERFORMANCE OBJECTIVE: Given a vacuum frame, film developing chemicals and equipment and a properly exposed piece of film, the student will produce negatives and positives with a variety of films, equipment and conditions to that meet industry quality standards.

ENABLING OBJECTIVES:

1. **Demonstrate safety procedures.**
2. **Identify parts of a vacuum frame.**
3. **Describe the function of a vacuum frame.**
4. **Perform vacuum set up procedures.**
5. **Perform darkroom film development set up procedures.**
6. **Operate the vacuum frame using a variety of copy and procedures.**

06.18 TASK: Demonstrate the Use of a Density Guide by Being Able to Explain Changes in Density and by Confirming them in Laboratory Practice

PERFORMANCE OBJECTIVE: Given a film exposing device, film developing chemicals and equipment, the student will correctly demonstrate the use of a density guide and explain changes in density by correctly confirming them in laboratory practice.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Perform film exposing device set up procedures.**

3. Perform darkroom film development set up procedures.
4. Position unexposed film, density guide and make a variety of exposures using the step off method.

06.19 TASK: Demonstrate the Use of Filters in Laboratory Projects

PERFORMANCE OBJECTIVE: Given filters, filter chart, camera, film, film developing chemicals and equipment, the student will copy with color, use filters to hold/ delete color to produce a negative to meet industry quality standards.

ENABLING OBJECTIVES:

1. Demonstrate safety precautions.
2. Define terms associated with photographic filtering.
3. Perform darkroom film developing set up procedures.
4. Perform camera set up procedures.
5. Select appropriate filter in camera.
6. Compute exposure.
7. Process film.

06.20 TASK: Explain the Need and Value of Establishing And Maintaining Standardized Procedures

PERFORMANCE OBJECTIVE: Given resource materials and equipment, correctly explain the need and value of establishing and maintaining standardized procedures.

ENABLING OBJECTIVES:

1. Explain the need and value of establishing and maintaining standardized procedures.
2. Describe the process to establish a standardized procedure for a printing facility.

06.21 TASK: Demonstrate Proper Cropping Techniques

PERFORMANCE OBJECTIVE: Given resource materials, equipment and illustrations to be cropped, correctly demonstrate proper cropping techniques.

ENABLING OBJECTIVES:

1. Define cropping.
2. Explain the reason for cropping.
3. Compare reproduction size to original.
4. Examine content of original to determine area to be cropped.
5. Compute reduction or enlargement of necessary.
6. Draw in crop marks.

CURRICULUM GUIDE FOR

PRINTING TECHNOLOGY

MODULE 7

GRAPHIC ARTS HALFTONE OPERATIONS

Division of Vocational Education
State of Idaho
Boise, Idaho
1992

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Each task describes an occupational activity which will result in a finished process or product. The tasks listed in each module represent the basic activities required of each student to demonstrate entry level competence for that specific system or field of study within the printing occupation. Individual records of student performance in completing the tasks listed within each module should be maintained.

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GRAPHIC ARTS HALFTONE OPERATIONS

07.01 TASK: Apply Basic Safety Rules

PERFORMANCE OBJECTIVE: Given the appropriate resource materials and graphic arts halftone equipment used, the student will be able to apply the basic safety rules for operation and use with 100% accuracy.

ENABLING OBJECTIVES:

1. **Describe safety procedures and practices relating to graphic arts halftone equipment and tools.**
2. **Demonstrate mastery of safety precautions at all times.**
3. **Recognize potential safety hazards.**
4. **Identify potential safety hazards.**
5. **Correct potential safety hazards.**

07.02 TASK: Follow Safety Procedures and Legal Requirements Under OSHA or Other Federal and State Regulatory Agencies

PERFORMANCE OBJECTIVE: Given the necessary pamphlets and safety materials pertaining to OSHA, federal, and state regulations, the student will be able to follow all safety regulations required by these governing agencies.

ENABLING OBJECTIVES:

1. **Describe safety precautions as stipulated by OSHA, federal and state regulations.**
2. **Demonstrate safety procedures and practices relating to graphic arts halftone equipment and tools.**
3. **Demonstrate mastery of stipulated safety precautions at all times.**
4. **Recognize potential safety hazards.**
5. **Identify potential safety hazards.**
6. **Correct potential safety hazards.**

07.03 TASK: Identify the Equipment and Materials Used in Graphic Arts Halftone Operations, Their Parts, and Functions and the Safety Rules Relating to Their Operation

PERFORMANCE OBJECTIVE: Given the graphic arts halftone equipment list and materials used, the student will be able to identify by name and use, plus state the safety rules relating to the equipment operation.

ENABLING OBJECTIVES:

1. **Demonstrate safety operations.**
2. **Identify various graphic arts halftone tools.**
3. **Identify the parts of the various graphic arts tools.**
4. **Explain the functions of the various graphic arts halftone tools.**
5. **Describe the safety precautions for graphic arts halftone equipment.**

6. Identify various pieces of graphic arts halftone equipment.
7. Identify the parts of the various pieces of graphic arts halftone equipment.
8. Explain the required safety factors when handling graphic arts halftone materials.
9. Demonstrate the required safety factors when handling graphic arts halftone materials.

07.04 TASK: Setup and Operate Graphic Arts Halftone Tools and Mechanical Equipment

PERFORMANCE OBJECTIVE: Given the proper information, appropriate instruction, graphic arts halftone tools, and equipment, the student will be able to setup and operate the graphic arts halftone tools and mechanical equipment.

ENABLING OBJECTIVES:

1. Correlate various tone gradation scales in relation to photographic/printing tonal scales, tints, and grays.
2. Examine, through a magnifying glass, a halftone print or negative which was made with a coarse screen.
3. Make a sketch of the dot shapes in the highlight area, the midtone area, and the shadow area.
4. Prepare a detailed list/order of operations for making a halftone negative.
5. Produce a series of satisfactory halftone negatives, using detail and a flash exposure.
6. Prepare a list of tools, equipment, supplies, and materials needed for halftone photography.
7. Identify via the appropriate lens, various gray scales from 10% to 100%.
8. Demonstrate the proper camera set-up and exposure conditions which prove satisfactory for the main exposure.
9. Create a satisfactory halftone negative from a coarse-screened already printed halftone picture.
10. Select a computer-drawn graphic and utilize the appropriate software to alter the original shading of the chosen graphic.
12. Incorporate halftone knowledge to create a computer-created design.

07.05 TASK: Perform Operator Maintenance on Graphic Arts Halftone Equipment

PERFORMANCE OBJECTIVE: Given the necessary maintenance materials and shop manuals for the typography equipment, the student will be able to perform operator maintenance to manufacturer's specifications.

ENABLING OBJECTIVES:

1. Locate all necessary lubrication points as identified in shop manuals.
2. Demonstrate maintenance ability on located lubrication points.
3. Demonstrate safety precautions during lubrication processes.
4. Locate all necessary wear and adjustment points on typography equipment as identified in shop manuals.
5. Perform maintenance on wear and adjustment points.

6. Demonstrate safety precautions during wear and adjustment point inspections.

07.06 TASK: Calibrate a Reflection Densitometer to Manufacturer's Specifications

PERFORMANCE OBJECTIVE: Given a reflection densitometer and manufacturer's calibration specifications, the student will be able to calibrate said densitometer to manufacturer's specifications.

ENABLING OBJECTIVES:

1. Explain halftone applications related to printing.
2. Define the terms: densitometry, sensitometry, opacity, density, transmittance, reflectance.
3. Compute opacity values.
4. Compute density and transmission values.
5. Convert units of density, transmittance, and opacity to each other.
6. Calibrate a densitometer for camera lighting for level and evenness.
7. Calibrate a densitometer to determine camera exposures in relation to changing conditions.
8. Calibrate a densitometer to determine exposure times for continuous tone prints.
9. Calibrate a densitometer to determine percentage of grayness or dot percentage.
10. Calibrate a densitometer to determine paper opacity and brightness.

07.08 TASK: Solve a Variety of Exposure Problems Using an Exposure Computer

PERFORMANCE OBJECTIVE: Given the various exposure problems, the exposure computer, and the appropriate halftone materials, the student will be able to solve exposure problems using an exposure computer.

ENABLING OBJECTIVES:

1. Explain the "shadow flash exposure" technique.
2. Explain the "highlighting" (or bump) exposure method.
3. Explain the "still development" exposure process.
4. Explain the "magenta screen filters" exposure technique.
5. Solve exposure problems with an exposure computer.

CURRICULUM GUIDE FOR

PRINTING TECHNOLOGY

MODULE 8

COLOR REPRODUCTION OPERATIONS

Division of Vocational Education
State of Idaho
Boise, Idaho
1992

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COLOR REPRODUCTION OPERATIONS

08.01 TASK: Apply Basic Safety Rules

PERFORMANCE OBJECTIVE: Given the appropriate resource materials and color reproduction operation equipment, the student will be able to apply the basic safety rules for operation and use with 100% accuracy.

ENABLING OBJECTIVES:

1. **Describe safety procedures and practices relating to color reproduction operations equipment and tools.**
2. **Demonstrate mastery of safety precautions at all times.**
3. **Recognize potential safety hazards.**
4. **Identify potential safety hazards.**
5. **Correct potential safety hazards.**

08.02 TASK: Follow Safety Procedures and Legal Requirements Under OSHA or Other Federal and State Regulatory Agencies

PERFORMANCE OBJECTIVE: Given the necessary pamphlets and safety materials pertaining to OSHA, federal, and state regulations required by these governing agencies, the student will explain safety regulations pertaining to color reproduction operations.

ENABLING OBJECTIVES:

1. **Describe safety precautions as stipulated by OSHA, federal and state regulations.**
2. **Demonstrate safety procedures and practices relating to color reproduction operations equipment and tools.**
3. **Demonstrate mastery of stipulated safety precautions at all times.**
4. **Recognize potential safety hazards.**
5. **Identify potential safety hazards.**
6. **Correct potential safety hazards.**

08.03 TASK: Setup, Operate, and Maintain Color Reproduction Tools and Equipment

PERFORMANCE OBJECTIVE: Given equipment, materials, supplies and job specifications, the student will set up and operate equipment to produce a print copy.

ENABLING OBJECTIVES:

1. **Identify the equipment used in color reproduction operations.**
2. **Identify the materials used in color reproduction operations.**
3. **Identify the components of the equipment used in color reproduction.**
4. **Describe the functions of the components of equipment used in color reproduction.**

5. Compare and contrast color separation systems for direct, indirect and electronic scanning.
6. Explain the requirements for color production by graphing and interpreting the deficiencies of printing inks.

08.04 TASK: Setup and Operate Color Reproduction Operation Tools and Equipment

PERFORMANCE OBJECTIVE: Given job specifications, equipment, materials and supplies, the student will set up and operate color reproductive equipment to produce a color copy.

ENABLING OBJECTIVES:

1. Follow proper safety procedures.
2. Describe the procedure to set up color reproduction equipment.
3. Describe the procedure to operate color reproduction equipment.
4. Describe the procedure to provide maintenance on color reproduction equipment.
5. Produce a color reproduction copy.

08.05 TASK: Apply Principles of Visible Light by Constructing a Spectrograph and Placing the Major Subdivisions of White Light in Their Proper Position According to Scientific Theory

PERFORMANCE OBJECTIVE: Given resource materials, the student will identify and place in proper position the major subdivisions of white light on the spectrum.

ENABLING OBJECTIVES:

1. Describe the use of a spectrograph.
2. Identify the proper positions of light characteristics according to scientific theory.
3. Differentiate rate between transmission color and reflected color pertaining to process color filters.
4. Explain the interrelationship of light and color.
5. Explain the principles of color as they apply to process printing.
6. Explain the difference between additive and subtractive color.
7. Explain the color absorption/reflection theory applied to printing inks.

08.06 TASK: Interpret Manufacturer's Film Data Sheets of Various Applicable Films

PERFORMANCE OBJECTIVE: Given resource materials, films, and appropriate film data sheets, the student will interpret the film sheet data to select appropriate film for printing jobs.

ENABLING OBJECTIVES:

1. **Define terms associated with films used in printing.**
2. **Compare and contrast characteristics of various films.**
3. **Select appropriate film for various printing applications.**

08.07 TASK: Apply the Principles of Densitometry and Sensitometry to Establish Local Laboratory Standards

PERFORMANCE OBJECTIVE: Given equipment, materials, and supplies, the student will establish a local standard for equipment used in the printing facility.

ENABLING OBJECTIVE:

1. **Define densitometry and sensitometry.**
2. **Describe the procedure for determining laboratory standards for equipment and materials.**
3. **Compute a laboratory standard.**
4. **Compare and contrast the function of the reflection densitometer and the density guide.**

CURRICULUM GUIDE FOR

PRINTING TECHNOLOGY

MODULE 9

PERFORM STRIPPING OPERATIONS

Division of Vocational Education
State of Idaho
Boise, Idaho
1992

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PERFORM STRIPPING OPERATIONS

09.01 TASK: Apply Basic Safety Rules

PERFORMANCE OBJECTIVE: Given the appropriate resource materials and stripping equipment used, the student will be able to apply the basic safety rules for operation and use with 100% accuracy.

ENABLING OBJECTIVES:

1. **Describe safety procedures and practices relating to stripping equipment and tools.**
2. **Demonstrate mastery of safety precautions at all times.**
3. **Recognize potential safety hazards.**
4. **Identify potential safety hazards.**
5. **Correct potential safety hazards.**

09.02 TASK: Follow Safety Procedures and Legal Requirements Under OSHA or Other Federal and State Regulatory Agencies

PERFORMANCE OBJECTIVE: Given the necessary pamphlets and safety materials pertaining to OSHA, federal, and state regulations required by these governing agencies the student will explain safety regulations pertaining to stripping operations.

ENABLING OBJECTIVES:

1. **Describe safety precautions as stipulated by OSHA, federal and state regulations.**
2. **Demonstrate safety procedures and practices relating to stripping equipment and tools.**
3. **Demonstrate mastery of stipulated safety precautions at all times.**
4. **Recognize potential safety hazards.**
5. **Identify potential safety hazards.**
6. **Correct potential safety hazards.**

09.03 TASK: Identify the Equipment and Materials Used in Stripping Operations, their Parts and Functions and the Safety Rules Relating to their Operation

PERFORMANCE OBJECTIVE: Given the necessary equipment and materials used in stripping, the student will identify equipment and materials and demonstrate basic safety rules.

ENABLING OBJECTIVES:

1. **Identify stripping tools and equipment .**
2. **Describe the functions of the stripping equipment and tools.**
3. **Identify stripping materials.**
4. **Describe the use of stripping materials.**

09.04 TASK: Setup and Operate Stripping Operation Tools and Equipment

PERFORMANCE OBJECTIVE: Given the necessary equipment, supplies, and job specifications, the student will produce a routine flat to conform to established industry production standards.

ENABLING OBJECTIVES:

1. **Apply basic safety rules.**
2. **Determine which press will be used to run the job.**
3. **Describe how the light table is used in relation to job specifications.**
4. **Use stripping procedures to produce routine flats.**

09.05 TASK: Perform Operator Maintenance on Stripping Operations Equipment

PERFORMANCE OBJECTIVE: Given the necessary instructions, the student will clean and align stripping operations equipment.

ENABLING OBJECTIVES:

1. **Apply basic safety rules.**
2. **Check light table for straightness.**
3. **Straighten light tables if necessary.**
4. **Clean glass table tops.**
5. **Clean registration equipment.**

09.06 TASK: Define Terms Used in Stripping

PERFORMANCE OBJECTIVE: Given the necessary instructions and resource materials, the student will correctly define stripping terms.

ENABLING OBJECTIVES:

1. **Identify resource materials.**
2. **Define terms associated with stripping.**

09.07 TASK: Analyze the Various Approaches to Stripping by Comparing and Contrasting Preprinted Masking Sheets with Conventional Nonprinted Masking Sheets

PERFORMANCE OBJECTIVE: Given preprinted masking sheets and conventional masking sheets, the student will analyze various stripping procedures.

ENABLING OBJECTIVES:

1. **Describe preprinted masking sheets.**

2. Describe nonprinted masking sheets.
3. Analyze the advantages and/or disadvantages of preprinted and nonprinted masking sheets.

09.08 TASK: Identify the Parts of a Contact Frame and Point Light Source and Explain Their Use

PERFORMANCE OBJECTIVE: Given the resource materials and equipment the student will identify the parts of a contact frame and explain their use.

ENABLING OBJECTIVES:

1. Discuss safety precautions.
2. Identify the components of a contact frame and point light source.
3. Describe the function of the components of a contact frame and point light source.
4. Explain the use of a contact frame and point light source.

09.09 TASK: Produce Contacts Using Orthochromatic and Duplicating Film Using Transmission Density Guide and Standard Time and Temperature Development

PERFORMANCE OBJECTIVE: Given a contact frame, film developing chemicals and equipment, properly exposed pieces of orthochromatic and duplicating film and a transmission density guide, the student will produce contacts that meet industry quality standards, using standard time and temperature development procedures.

ENABLING OBJECTIVES:

1. Demonstrate safety precautions.
2. Perform contact frame set up procedures.
3. Perform darkroom film development set up procedures.
4. Examine product for quality.
5. Demonstrate the ability to produce contacts using orthochromatic and duplicating film.

09.10 TASK: Apply Basic Principles of Stripping Using: T-Square and Triangle to Align Position and Tape Film

PERFORMANCE OBJECTIVE: Given equipment and materials used in the stripping function, a t-square and triangle, the student will align, position, and tape film on ruled or unruled plastic or paper masking sheets, open windows and opaque to meet industry quality standards.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Check job ticket for job specifications.**
3. **Determine and draw out running size of the paper on the masking sheet.**
4. **Determine and draw out the finished size of the paper on the masking sheet**
5. **Determine and draw out the image areas on the masking sheet.**
6. **Determine location of scribe marks on the negative for alignment with the masking sheet.**
7. **Attach negative to masking sheet, open windows and opaque.**

09.11 TASK: Prepare Working Dummy and Produce a One-Color, One-Up Layout/Flat

PERFORMANCE OBJECTIVE: Given job specifications, equipment and materials, the student will produce a one-color, one-up layout/flat.

ENABLING OBJECTIVES:

1. **Apply basic safety rules.**
2. **Define terms associated with one color, one-up layout/flat.**
3. **Prepare one-up, one-color working dummy.**
4. **Identify press to be used.**
5. **Strip to job specifications.**
6. **Produce a one-color, one-up layout/flat.**

09.12 TASK: Prepare Working Dummy and Produce a One-Color, Multiple Layout/Flat

PERFORMANCE OBJECTIVE: Given job specifications, equipment and materials, the student will produce a one-color, multiple layout/flat.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Check job ticket for job specifications.**
3. **Define terms associated with multiple page layout.**
4. **Describe pin register system.**
5. **Determine additional masking sheets needed for halftone and screen tints.**
6. **Prepare masking sheets.**
7. **Attach base negative to the masking sheet.**

8. Produce a sepia of pin registered flats.
9. Attach ruby material as required and open windows for halftones and screen tints as required.
10. Open windows, attach halftone negatives and screen tints per shop procedures.
11. Opaque.
12. Produce a one-color, multiple layout/flat.

09.13 TASK: Explain Methodology Relating to Step-and-Repeat by Choosing or Recognizing the Different Procedures Relating to Particular Situations

PERFORMANCE OBJECTIVE: Given materials, equipment and job specifications, the student will explain the difference between multi film stripping and step-and-repeat procedures.

ENABLING OBJECTIVES:

1. Identify job specifications.
2. Define terms associated with step and repeat procedure.
3. Determine press to be used.
4. Identify paper size.
5. Identify running size sheet.
6. Compare multifilm procedures to step and repeat procedures and explain benefits of each.

09.14 TASK: Prepare Working Dummy and Produce a One-Color, Step Layout/Flat

PERFORMANCE OBJECTIVE: Given job specifications, equipment and layout materials, the student will produce a one-color step layout/flat.

ENABLING OBJECTIVES:

1. Apply basic safety rules.
2. Prepare working dummy.
3. Describe step layout.
4. Strip to job specifications.
5. Produce a one-color, step layout/flat.

09.15 TASK: Prepare Working Dummy and Produce a One-Color, Four Page Flat

PERFORMANCE OBJECTIVE: Given job specifications, equipment and materials, the student will produce a one-color, four page flat.

ENABLING OBJECTIVES:

1. Demonstrate safety precautions.
2. Define terms associated with layout/flat.

3. Describe a 4 page layout.
4. Check job ticket for job specifications.
5. Prepare a dummy 4 page.
6. Determine running size of the paper on the masking sheet.
7. Determine signature trim and fold lines on the masking sheet.
8. Determine the finished page sizes on the masking sheet.
9. Determine the page image areas on the masking sheet.
10. Scribe marks on the negatives for alignment with the masking sheet.
11. Produce a one-color, four page flat.

09.16 TASK: Produce Chokes, Spreads, and Knockouts

PERFORMANCE OBJECTIVE: Given the materials and equipment, the student will produce chokes, spreads and knockouts to conform to established industry quality production standards (Franklin).

ENABLING OBJECTIVES:

1. Apply basic safety rules.
2. Describe chokes, spreads and knockouts.
3. Define terms associated with developing procedures.
4. Describe procedures for using a contact frame.
5. Produce chokes, spreads and knockouts.

09.17 TASK: Prepare Working Dummy and Produce a One-Color, Eight-Page Layout/Flat

PERFORMANCE OBJECTIVE: Given job specifications, the student will produce a one-color, eight page layout/flat to meet quality industry standards.

ENABLING OBJECTIVES:

1. Demonstrate safety precautions.
2. Define terms associated with layout/flat.
3. Describe a 4 page layout.
4. Check job ticket for job specifications.
5. Prepare a dummy 4 page.
6. Determine running size of the paper on the masking sheet.
7. Determine signature trim and fold lines on the masking sheet.
8. Determine the finished page sizes on the mask sheet.
9. Determine the page image areas on the masking sheet.
10. Scribe marks on the negatives for alignment with the masking sheet.
11. Produce a one-color, eight page layout/flat.

09.18 TASK: Demonstrate the Cutting of Rubylith Masks by Trapping to Key Line Negatives

PERFORMANCE OBJECTIVE: Given materials and instructions, the student will cut rubylith film in register with a key line negative to meet quality industry standards.

ENABLING OBJECTIVES:

1. Apply basic safety rules.
2. Explain the importance of using a sharp knife and a steady hand.
3. Describe the procedure for using ruby material.
4. Cut rubylith.

09.19 TASK: Prepare a Working Dummy and Apply Principles of a Pin-Register System to Produce a Multiple-Burn Exposure Layout/Flat (Halftone and Screen Tints)

PERFORMANCE OBJECTIVE: Given materials and equipment, the student will use a pin register system to produce a multiple exposure layout/flat using halftones and screen tints.

ENABLING OBJECTIVES:

1. Demonstrate safety precautions.
2. Check job ticket for job specifications.
3. Define terms associated with multiple page layout/flat.
4. Describe pin register system.
5. Determine additional masking sheets needed for halftone and screen tints.
6. Prepare masking sheets.
7. Attach base negative to the masking sheet.
8. Produce a sepia of pin registered flats.
9. Produce a working dummy.
10. Attach ruby material if required and open windows for halftones and screen tints as required.
11. Open windows, attach halftone negatives and screen tints per shop procedures.
12. Opaque.
13. Produce a multiple-burn exposure layout/flat.

09.20 TASK: Produce Film Composites of Four Color Process with 1, 2, and 4 Page Layout/Flat

PERFORMANCE OBJECTIVE: Given materials and equipment, the student will produce film composites of four color process with a 1, 2 and 4 page layout/flat.

ENABLING OBJECTIVES:

1. Apply basic safety rules.
2. Prepare working dummy for 1 page layout.

3. Prepare working dummy for 2 page layout.
4. Prepare working dummy for 4 page layout.
5. Describe the use of clear mylar in 4 color process stripping.
6. Describe the procedure for stripping 4 color process with composite mask sheets.
7. Produce film composites.

09.21 TASK: Inspect and Evaluate Flats to Original Mechanical

PERFORMANCE OBJECTIVE: Given exposed and process proofs, linen tester, inspection materials, and equipment, the student will inspect and compare flats to the original mechanical to meet industry quality standards.

ENABLING OBJECTIVES:

1. Demonstrate safety precautions.
2. Compare job ticket and mechanical to determine quality of flat.
3. Describe faults to look for when inspecting flats.

09.22 TASK: Describe/Apply the Principles of Computer-Aided Copy Preparation Using Color Separation, Chokes and Spreads, Electronic Masking and Mechanical or Electronically Generated Color Proofs of Output

PERFORMANCE OBJECTIVE: Given the resource materials and instructions, the student will describe/apply the principles of computer-aid copy preparation using color separation, chokes and spreads, electronic masking and mechanical or electronically generated color proofs of output.

ENABLING OBJECTIVES:

1. Define terms associated with computer-aided copy.
2. Describe the principles of computer aided copy preparation.
3. Set up the computer and related equipment or software to produce a copy.
4. Produce negatives using computer-aided process.

CURRICULUM GUIDE FOR

PRINTING TECHNOLOGY

MODULE 10

PERFORM PROOFING AND PLATEMAKING OPERATIONS

Division of Vocational Education
State of Idaho
Boise, Idaho
1992

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PERFORM PROOFING AND PLATEMAKING OPERATIONS

10.01 TASK: Apply Basic Safety Rules

PERFORMANCE OBJECTIVE: Given the appropriate resource materials and proofing and platemaking equipment, the student will be able to apply the basic safety rules for operation and use with 100% accuracy.

ENABLING OBJECTIVES:

1. **Describe safety procedures and practices relating to proofing and platemaking equipment and tools.**
2. **Demonstrate mastery of safety precautions at all times.**
3. **Recognize potential safety hazards.**
4. **Identify potential safety hazards.**
5. **Correct potential safety hazards.**

10.02 TASK: Follow Safety Procedures and Legal Requirements Under OSHA or Other Federal and State Regulatory Agencies

PERFORMANCE OBJECTIVE: Given the necessary pamphlets and safety materials pertaining to OSHA, federal, and state regulations required by these governing agencies, the student will explain safety regulations pertaining to proofing and platemaking operations.

ENABLING OBJECTIVES:

1. **Describe safety precautions as stipulated by OSHA, federal and state regulations.**
2. **Demonstrate safety procedures and practices relating to proofing and platemaking equipment and tools.**
3. **Demonstrate mastery of stipulated safety precautions at all times.**
4. **Recognize potential safety hazards.**
5. **Identify potential safety hazards.**
6. **Correct potential safety hazards.**

10.03 TASK: Identify the Equipment and Materials Used in Proofing and Platemaking Operations, their Parts and Functions and the Safety Rules Relating to their Operation

PERFORMANCE OBJECTIVE: Given resource materials and equipment, the student will correctly identify and describe the equipment and materials used in proofing and plate making.

ENABLING OBJECTIVES:

1. **Apply basic safety rules.**
2. **Define terms associated with proofing and platemaking.**

3. Identify the equipment and materials used in proofing and platemaking.
4. Describe the function and use of the equipment and materials used in proofing and platemaking.

10.04 TASK: Setup and Operate Proofing and Platemaking Tools and Equipment

PERFORMANCE OBJECTIVE: Given equipment and materials the student will set up and operate proofing and platemaking equipment to comply to industry quality standards.

ENABLING OBJECTIVES:

1. Apply basic safety rules.
2. Describe the functions of proofing and platemaking tools and equipment.
3. Describe the procedure for setting up equipment.
4. Set up and operate equipment.

10.05 TASK: Perform Operator Maintenance on Proofing and Platemaking Equipment

PERFORMANCE OBJECTIVE: Given the necessary instructions, the student will clean and perform operator maintenance on proofing and platemaking equipment to manufacturer's recommendations.

ENABLING OBJECTIVES:

1. Apply basic safety rules.
2. Discuss the importance of proper maintenance and cleaning of equipment.
3. Check light tables for straightness.
4. Clean glass table tops.
5. Clean pin register equipment.
6. Maintain and clean exposing unit and light source.

10.06 TASK: Produce Proofs on Diazo, Silver and Color Proofing Materials

PERFORMANCE OBJECTIVE: Given originals requiring proofing, and exposure device, produce proofs on diazo, silver and color proof material to meet industry quality standards.

ENABLING OBJECTIVES:

1. Demonstrate safety precautions.
2. Perform exposure device setup procedures.
3. Perform developing set up procedures.
4. Determine proper sequence of proofs.
5. Produce proofs.

10.07 TASK: Inspect and Evaluate Proofs to Original Mechanical

PERFORMANCE OBJECTIVE: Given exposed and processed proofs, linen tester, inspection materials, and equipment, the student will inspect and compare proofs to the original mechanical to meet industry quality standards.

ENABLING OBJECTIVES:

1. Demonstrate safety precautions.
2. Check job specifications.
3. Describe faults to look for when inspecting proofs.
4. Inspect and compare proofs.

10.08 TASK: Identify, Contrast and Compare Plates/Carriers Such as Paper, Photo Direct, Foil, and Aluminum Subtractive for Run Length and Quality to Suit Customer Specifications

PERFORMANCE OBJECTIVE: Given the materials and resource materials the student will identify paper, photo direct, foil and subtractive plates/carriers for run length and quality to meet customer specifications.

ENABLING OBJECTIVES:

1. Identify long and short run carriers.
2. Identify light source for exposure.
3. Describe the differences and similarities between various types of plates/carriers.
4. Select plate/carrier for customer specification.

10.09 TASK: Process Paper, Photo Direct, Foil, and Aluminum Subtractive Plates to Manufacturer Specifications

PERFORMANCE OBJECTIVE: Given the materials and equipment the student will process paper, photo direct, foil and aluminum subtractive plates/carriers to manufacturer specifications.

ENABLING OBJECTIVES:

1. Apply basic safety rules.
2. Describe the functions of a transmission density guide.
3. Calculate exposures.
4. Describe light source for different materials.
5. Process plates/carriers.

10.10 TASK: Inspect and Evaluate Plates to Proofs

PERFORMANCE OBJECTIVE: Given processed plates, inspect and evaluate plates to proofs to meet industry quality standards.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Check job specifications.**
3. **Describe faults to look for when inspecting plates and proofs.**
4. **Inspect and compare plates to proofs.**

10.11 TASK: File, Handle and Retrieve Flats and Plates

PERFORMANCE OBJECTIVE: Given plates and flats, file or retrieve the flats and plates with proper handling to conform to individual shop or plant filing procedures.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Describe the need for proper handling and storage of plates & flats.**
3. **Describe proper procedure of filing plates and flats.**
4. **Retrieve plates and flats.**

CURRICULUM GUIDE FOR

PRINTING TECHNOLOGY

MODULE 11

PERFORM OFFSET PRESS OPERATIONS

Division of Vocational Education
State of Idaho
Boise, Idaho
1992

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PERFORM OFFSET PRESS OPERATIONS

11.01 TASK: Apply Basic Safety Rules

PERFORMANCE OBJECTIVE: Given the appropriate resource materials and offset equipment, the student will be able to apply the basic safety rules for operation and use with 100% accuracy.

ENABLING OBJECTIVES:

1. Describe safety procedures and practices relating to offset equipment and tools.
2. Demonstrate mastery of safety precautions at all times.
3. Recognize potential safety hazards.
4. Identify potential safety hazards.
5. Correct potential safety hazards.

11.02 TASK: Follow Safety Procedures and Legal Requirements Under OSHA or Other Federal and State Regulatory Agencies

PERFORMANCE OBJECTIVE: Given the necessary pamphlets and safety materials pertaining to OSHA, federal, and state regulations required by these governing agencies, the student will explain safety regulations pertaining to the offset press operations.

ENABLING OBJECTIVES:

1. Describe safety precautions as stipulated by OSHA, federal and state regulations.
2. Demonstrate safety procedures and practices relating to offset equipment and tools.
3. Demonstrate mastery of stipulated safety precautions at all times.
4. Recognize potential safety hazards.
5. Identify potential safety hazards.
6. Correct potential safety hazards.

11.03 TASK: Identify the Equipment and Materials Used in Offset Press Work Operations, Their Parts, Functions, and Safety Rules Relating to Their Operation

PERFORMANCE OBJECTIVE: Given equipment and materials the student will identify their parts, explain their functions, and describe the safety precautions.

ENABLING OBJECTIVES:

1. Demonstrate safety measures.
2. Identify various types of offset presses.
3. Identify the six parts of an offset press.
4. Explain the functions of the six parts of an offset press.

5. Identify types of inks.
6. Identify types of plates.
7. Identify fountain solutions.
8. Explain the functions of inks, plates, and fountain solutions.

11.04 TASK: Set Up and Operate Offset Press Equipment

PERFORMANCE OBJECTIVE: Given the necessary equipment and material, the student will set up and operate an offset press.

ENABLING OBJECTIVES:

1. Demonstrate safety precautions.
2. Determine equipment and materials from job-ticket.
3. Demonstrate feeder set up.
4. Demonstrate register system set up.
5. Demonstrate plate hanging.
6. Demonstrate the procedure for moistening dampeners.
7. Demonstrate the procedure for inking rollers.
8. Demonstrate delivery set up.
9. Demonstrate make ready procedures.
10. Get final approval for run.
11. Operate the press for a specific run.

11.05 TASK: Perform Operator Maintenance on Offset Press Equipment

PERFORMANCE OBJECTIVE: Given the necessary materials (oil, grease, shop towels, and manual) the student will demonstrate maintenance procedures on offset presses.

ENABLING OBJECTIVES:

1. Demonstrate safety precautions.
2. Locate all lubrication points as described in manual.
3. Perform lubrication maintenance by starting at one point and lubricating all lubrication points on the press.

11.06 TASK: Explain Basic Principles of the Lithographic Process

PERFORMANCE OBJECTIVE: Given the necessary materials, the student will explain basic principles of the lithographic process.

ENABLING OBJECTIVES:

1. Explain the purpose of the dampening system in relationship to the image area and non image area.

2. Explain the purpose of the inking system in relationship to the image area and non image area.
3. Explain the purpose of the plate cylinder.
4. Explain the purpose of the blanket cylinder.
5. Explain the purpose of the impression cylinder.

11.07 TASK: Compare and Contrast Feeder Systems (Single Sheet, Stream Fed, and Web Fed System

PERFORMANCE OBJECTIVE: Given the necessary machinery, texts, and field trips, the student will compare and contrast single sheet feeder, stream fed, and web fed systems.

ENABLING OBJECTIVES:

1. Explain the operation of a sheet fed system.
2. Explain the operation of a stream fed system.
3. Explain the operation of a web fed system.
4. Identify the three types of presses.
5. List advantages of various feeder systems.

11.08 TASK: Compare and Contrast Delivery Systems (Sheet and Web Fed Presses)

PERFORMANCE OBJECTIVE: Given the necessary machinery, texts, instruction, and field trips, the student will compare and contrast delivery systems for sheet and web fed presses.

ENABLING OBJECTIVES:

1. Identify the two types of delivery systems.
2. Explain operation of chain delivery on sheet fed presses.
3. Explain operation of chute delivery on sheet fed presses.
4. Explain the folding process on a web fed delivery press.
5. Explain the cutting process on a web fed delivery press.
6. Describe the operation of the two delivery systems.

11.09 TASK: Compare and Contrast Register Systems (Side Guide and Head Register)

PERFORMANCE OBJECTIVE: Given the necessary machinery, reference material, and field trips, the student will compare and contrast register systems such as side guide, and head register.

ENABLING OBJECTIVES:

1. Define terms associated with register systems.
2. Identify components of a register system.
3. Explain the operation of push guide.

4. Explain the operation of pull guide.
5. Explain the operation of head register.
6. Describe the operation of a register system.

11.10 TASK: Compare and Contrast Ink and Moisture Systems (Sheet and Web Fed Systems)

PERFORMANCE OBJECTIVE: Given the necessary machinery, reference material, and field trips, the student will compare and contrast the ink and moisture systems for sheet fed and web fed presses.

ENABLING OBJECTIVES:

1. Explain the ink and moisture system for a sheet fed press.
2. Explain ducted moisture systems.
3. Explain continuous moisture systems.
4. Explain the ink and moisture system for a web fed press.

11.11 TASK: Explain Make Ready Procedures in Proper Sequence in Preparation for Actual Production

PERFORMANCE OBJECTIVE: Given the necessary reference material and instruction, the student will be able to explain the make ready procedures in sequential order.

ENABLING OBJECTIVES:

1. Explain the job-ticket.
2. Explain feeder set up.
3. Explain register set up.
4. Explain ink and water balance.
5. Explain delivery set up.
6. Explain plate hanging.
7. Explain vertical adjustments.
8. Explain horizontal adjustments.
9. Obtain authorization to complete press run.

11.12 TASK: Explain Basic Principles of Offset Lithography Pertaining to Dampening Systems (Ducted and Continuous)

PERFORMANCE OBJECTIVE: Given the necessary machinery, ie. press with ducted system and one with continuous system, the student will explain the basic principles of offset lithography.

ENABLING OBJECTIVES:

1. Discuss safety measures.

2. Describe the ducted system.
3. Describe the continuous system.
4. Describe the benefits of ducting and continuous systems.
5. Describe the problems of ducting and continuous systems.
6. Explain the formula and mixing of solution for each type of system.

11.13 TASK: Apply Basic Principles of Offset Lithography Pertaining to Chemical Components of Fountain Solutions (Acid, Alkaline, and Neutral)

PERFORMANCE OBJECTIVE: Given the necessary materials, the student will identify the components of fountain solutions and properly mix solutions.

ENABLING OBJECTIVES:

1. Apply basic safety precautions.
2. Explain extreme acid.
3. Explain weak acid.
4. Explain extreme alkaline.
5. Explain weak alkaline.
6. Explain neutral.
7. Mix fountain solution.

11.14 TASK: Apply Basic Principles of Offset Lithography Pertaining to Ph and Conductivity Control of Fountain Solutions and Demonstrate the Effects on the Lithographic Process

PERFORMANCE OBJECTIVE: Given the necessary supplies, (eg. ph tester, fountain concentrate, aluminum plates, paper plates,) the student will demonstrate the effects of various Ph levels on lithographic processes.

ENABLING OBJECTIVES:

1. Demonstrate safety precautions.
2. Demonstrate mixing fountain solutions.
3. Demonstrate the use of ph tester.
4. Identify whether acid, neutral, or alkaline.
5. Explain and demonstrate what happens when a solution is too acid.
6. Explain and demonstrate what happens when a solution is too alkaline.
7. Explain and demonstrate what happens when a solution is neutral.

11.15 TASK: Demonstrate the Inking System by Identifying Each Part and Making Proper Adjustments

PERFORMANCE OBJECTIVE: Given an offset press, the student will identify the inking system and its components and demonstrate making proper adjustments.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Explain the purpose of the fountain.**
3. **Demonstrate the use of adjusting screws pertaining to various coverages.**
4. **Describe the ductor roller and its purpose.**
5. **Describe the oscillating and vibrator rollers and their purpose.**
6. **Describe the form rollers and their purpose.**

11.16 TASK: Make Ready and Demonstrate Feeder and Delivery Systems

PERFORMANCE OBJECTIVE: Given an offset press, the student will make ready and demonstrate the feeder and delivery systems.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Describe the procedure to adjust pile guides to proper paper size.**
3. **Describe the procedure to adjust vacuum, suckers, and blowers.**
4. **Describe the procedure to adjust register board and check for register.**
5. **Introduce ink and water to an even balance.**
6. **Adjust delivery system to proper paper size.**
7. **Hang plate.**
8. **Adjust for proper positioning of image on paper.**

11.17 TASK: Demonstrate Methods for Achieving Register by Making Machine Adjustments

PERFORMANCE OBJECTIVE: Given an offset press, the student will demonstrate the various adjustments to achieve good register.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Explain registrations.**
3. **Demonstrate the side guide adjustments.**
4. **Demonstrate the use of skid wheels.**
5. **Demonstrate the use of brushes.**
6. **Demonstrate the use and explain the importance of adjustable head stops.**
7. **Demonstrate feed roller adjustments.**
8. **Demonstrate the use of paper retainers.**
9. **Demonstrate the use of wild side springs.**

11.18 TASK: Apply Basic Principles of Offset Press Operations to Produce Work and Turn, Work and Tumble, and Sheetwise Printed Forms

PERFORMANCE OBJECTIVE: Given the necessary materials and press, the student will produce a work and turn, work and tumble, and a sheetwise form.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions.**
2. **Explain work and turn.**
3. **Explain work and tumble.**
4. **Explain sheetwise.**
5. **Demonstrate work and turn by running one side and then turning the form over from right to left and print other side with same plate.**
6. **Demonstrate work and tumble by running one side and then turning the form over from end to end and print other side with same plate.**
7. **Demonstrate sheet wise by printing one side with one plate then turn printed sheet over and print other side with a second plate.**

CURRICULUM GUIDE FOR

PRINTING TECHNOLOGY

MODULE 12

PERFORMING FINISHING AND BINDING OPERATIONS

Division of Vocational Education
State of Idaho
Boise, Idaho
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This is one of a series of modules which comprise the Idaho Curriculum Guide for Printing/Graphic Arts Technology. Each module contains a listing of the tasks, performance objectives, and enabling objectives required to enable a student to achieve competency in a specific system or field of study within the basic printing technician occupational field. The numbering of these modules is not intended to dictate an order of instruction or scheduling. The order in which these modules may be taught is determined by each institution and its instructors.

Each task describes an occupational activity which will result in a finished process or product. The tasks listed in each module represent the basic activities required of each student to demonstrate entry level competence for that specific system or field of study within the printing occupation. Individual records of student performance in completing the tasks listed within each module should be maintained.

Although some provision is made for basic mathematics and communication skills within this guide, they may not be adequate to meet the needs of individual students. Counseling, guidance, and diagnostic test results may indicate a need for further preparation in these areas. In such cases, instructors are encouraged to utilize the resources and personnel within the institution to improve or complement the instructional process.

The benefits to students and institutions derived from this curriculum guide should be considerable. Articulation of students from secondary to post-secondary programs will be aided through the use of a single curriculum guide. The guide provides a tool for evaluation of local curriculum and programs. The guide may be used in a flexible manner to assure that printing programs meet the needs of local business and industry.

It is the goal of this program guide to provide a level of instruction which will impart entry level employment skills. Students should be carefully counseled on the importance of attaining competency in the tasks assigned. As in virtually all occupations today, printing technicians will require periodic up-dating and review in the future. It is important that each student understand that meeting the program standards is essential not only to obtain employment today but also to have a base upon which to retain employment in the future.

PERFORMING FINISHING AND BINDING OPERATIONS

12.01 TASK: Apply Basic Safety Rules

PERFORMANCE OBJECTIVE: Given necessary equipment and information, the student will apply basic safety rules related to finishing and binding operations.

ENABLING OBJECTIVES:

1. **Explain the purpose of MSDS requiremnets.**
2. **Analyze MSDS information related to solvents, adhesives, chemicals, and materials used in finishing and binding operations.**
3. **Identify potential safety hazards and suggest possible prevention methods.**
4. **Demonstrate safe working habits while performing all tasks.**

12.02 TASK: Follow Safety Procedures and Legal Requirements Under OSHA or other Federal and State Regulatory Agencies

PERFORMANCE OBJECTIVE: Given safety pamphlets and related information, the student will apply all safety regulations under OSHA or other federal and state regulatory agencies.

ENABLING OBJECTIVES:

1. **Evaluate the workplace with regard to all safety regulations.**
2. **Explain the reasons for all safety regulations.**
3. **Practice safe work habits.**

12.03 TASK: Identify the Equipment and Materials used in Finishing and Binding Operations, their Parts and Functions, and the Safety Rules Related to their Operation

PERFORMANCE OBJECTIVE: Given equipment and materials, identify the parts, functions, and safety precautions of finishing and binding equipment.

ENABLING OBJECTIVES:

1. **Demonstrate safety precautions related to finishing and binding equipment.**
2. **Identify the parts of various paper cutters.**
3. **Identify the parts of a paper drill.**
4. **Identify the parts of a paper folder.**
5. **Identify the parts of a paper jogger.**
6. **Identify the parts of paper packaging equipment.**
7. **Identify the parts of scoring and perforating equipment.**
8. **Identify the parts of a collator.**
9. **Identify the parts of a stitcher.**
10. **Identify the parts of various binding equipment.**

12.04 TASK: Setup, Operate and Maintain Bindery Equipment

PERFORMANCE OBJECTIVE: Given equipment and demonstrations, the student will safely use bindery equipment.

ENABLING OBJECTIVES:

1. **Practice safe operation practices.**
2. **Identify components of bindery equipment and describe their functions.**
3. **Follow job-ticket specifications to setup appropriate bindery equipment.**
4. **Operate and maintain bindery equipment.**

12.05 TASK: Apply Basic Principles of Finishing and Binding Operation Pertaining to Pre-Press Paper Cutting, Post-Press Paper Cutting and Post Bindery Cutting (after folding, stitching, etc.)

PERFORMANCE OBJECTIVE: Given equipment and materials, the student will perform the required paper cutting operations as per job-ticket.

ENABLING OBJECTIVES:

1. **Follow basic safety procedures.**
2. **Evaluate the appropriate paper cutting techniques to reduce waste and comply with job specifications.**
3. **Safely evaluate the sharpness of a paper cutter blade.**
4. **Determine proper pre or post press cut specifications from job ticket.**
5. **Calculate the number of press sheets that can be obtained from stock sheets with minimum waste and appropriate allowances for press spoilage.**
6. **Describe the purpose of a rule out.**
7. **Identify the parts of a paper cutter.**
8. **Describe the safety precautions pertaining to paper cutters.**
9. **Setup appropriate paper cutting equipment and safely perform the required cuts.**

12.06 TASK: Apply Basic Principles of Finishing and Binding Operations Pertaining to Folding Configurations

PERFORMANCE OBJECTIVE: Given equipment, job specifications, and material, the student will determine and perform fold operations for signatures according to job-ticket specifications.

ENABLING OBJECTIVES:

1. **Follow basic safety procedures.**
2. **Setup and perform pre-press cutting operations as required by signature specifications.**
3. **Setup and perform post-press cutting operations as required by signature specifications.**

12.07 TASK: Apply Basic Principles of Finishing and Binding Operations Pertaining to Folding

PERFORMANCE OBJECTIVE: Given equipment, job specifications, and material, the student will perform folding operations to job-ticket specifications.

ENABLING OBJECTIVES:

1. **Follow basic safety procedures.**
2. **Define terms associated with folding processes.**
3. **Identify components of equipment used in the folding process.**
4. **Describe the functions of equipment used in the folding process.**
5. **Set up and operate a folding machine in accordance with job-ticket.**
6. **Prepare folding dummy from press sheet in accordance with job-ticket.**
7. **Make a single fold.**
8. **Make a multiple parallel fold.**
9. **Make a right-angle fold.**

12.08 TASK: Apply Basic Principles of Finishing and Binding Operations Pertaining to Scoring and Perforating

PERFORMANCE OBJECTIVE: Given equipment, job specifications and materials, the student will safely setup and operate scoring and perforating equipment.

ENABLING OBJECTIVES:

1. **Follow basic safety procedures.**
2. **Identify equipment used for scoring and perforating operations.**
3. **Identify slitting, perforating,, and scoring functions pertaining to folding operations.**
4. **Setup scoring and perforating equipment as per job-ticket specifications.**
5. **Safely operate the appropriate scoring and perforating equipment.**

12.09 TASK: Apply Basic Finishing and Binding Operations Pertaining to Collating and Gathering

PERFORMANCE OBJECTIVE: Given equipment, job specifications and material, the student will collate and gather material to job-ticket specifications.
ENABLING OBJECTIVES:

1. **Follow basic safety procedures.**
2. **Describe the difference between collating and gathering.**
3. **Describe the process of collating flat sheets.**
4. **Describe the process of gathering signatures.**
5. **Setup and perform collating operation for specific printing job using hand and power equipment.**

12.10 TASK: Apply Basic Finishing and Binding Operations Pertaining to Binding Alternatives (Saddle, Side, Perfect, Comb, Spiral, Case, etc.)

PERFORMANCE OBJECTIVE: Given equipment, job specifications and material, the student will determine and perform specified binding operations as required by job-ticket.

ENABLING OBJECTIVES:

1. **Follow basic safety procedure.**
2. **Define perfect, spiral, saddle, side, comb and case binding.**
3. **Safely operate various binding machines.**
4. **Identify the various binding techniques and compare the advantages and disadvantages of each.**
5. **Set up and operate a stitcher (side and saddle).**
6. **Set up and operate a comb-binding machine.**

12.11 TASK: Apply Basic Finishing and Binding Operations Pertaining to Adhesive Binding (Padding and Fan-Apart)

PERFORMANCE OBJECTIVE: Given equipment, job specifications, and materials, the student will determine and perform the appropriate adhesive binding operation as per job specifications.

ENABLING OBJECTIVES:

1. **Follow MSDS regulations for applying solvents and adhesives.**
2. **Safely apply appropriate padding adhesive for a given job.**
3. **Setup and apply fan-apart adhesive to NCR forms.**
4. **Perform appropriate cleaning techniques using appropriate solvents.**

12.12 TASK: Apply Basic Finishing and Binding Operations Pertaining to Packaging and Identification

PERFORMANCE OBJECTIVE: Given equipment, job specifications, and materials, the student will safely perform packaging operations.

ENABLING OBJECTIVES:

1. **Follow basic safety procedures.**
2. **Define terms associated with the packaging process.**
3. **Identify equipment used in the packaging process.**
4. **Setup and operate packaging equipment.**

12.13 TASK: Demonstrate Methods of Counting Sheets (Machine Measurement, Weight, and Rapid Multiple Sheet Counting by Fives)

PERFORMANCE OBJECTIVE: Given an unknown quantity of paper, the student will perform various counting techniques.

ENABLING OBJECTIVES:

1. **Calculate the quantity of paper by weighing, height, and other methods.**
2. **Evaluate the accuracy of various counting methods.**

12.14 TASK: Hand and Machine Jog Paper Sheets

PERFORMANCE OBJECTIVE: Given equipment, material and job specifications, the student will jog paper by both hand and machine processes.

ENABLING OBJECTIVES:

1. **Follow basic safety procedures.**
2. **Define terms associated with jogging.**
3. **Describe the effects of static on jogging (fanning).**
4. **Identify equipment associated with jogging.**
5. **Describe the procedures for setting up a jogging machine.**
6. **Hand jog 8 1/2" X 11" sheets of paper.**
7. **Hand jog 17" X 22" sheets of paper.**
8. **Machine jog various sizes of paper sheets.**

12.15 TASK: Setup and Operate a Paper Drill for Standard Loose Leaf Binder

PERFORMANCE OBJECTIVE: Given equipment and materials, the student will setup and safely drill paper for a standard ring binding.

ENABLING OBJECTIVES:

1. **Follow basic safety procedures.**
2. **Identify the components of a paper drill.**
3. **Describe the functions of the components of a paper drill.**
4. **Describe the procedure for setting up a paper drill.**
5. **Safely evaluate the sharpness of a paper drill bit.**
6. **Determine hole locations from job-ticket specifications.**
7. **Adjust paper guides and safely perform drilling operation.**

12.16 TASK: Describe Die-Cutting, Embossing, Foil Stamping, and Numbering Systems

PERFORMANCE OBJECTIVE: Given various samples, the student will identify the finishing techniques of die-cutting, embossing, foil stamping, and numbering.

ENABLING OBJECTIVES:

1. **Identify the equipment used to perform die-cutting, embossing, foil stamping, and numbering.**
2. **Describe the purpose or application of die-cutting, embossing, foil stamping, and numbering.**